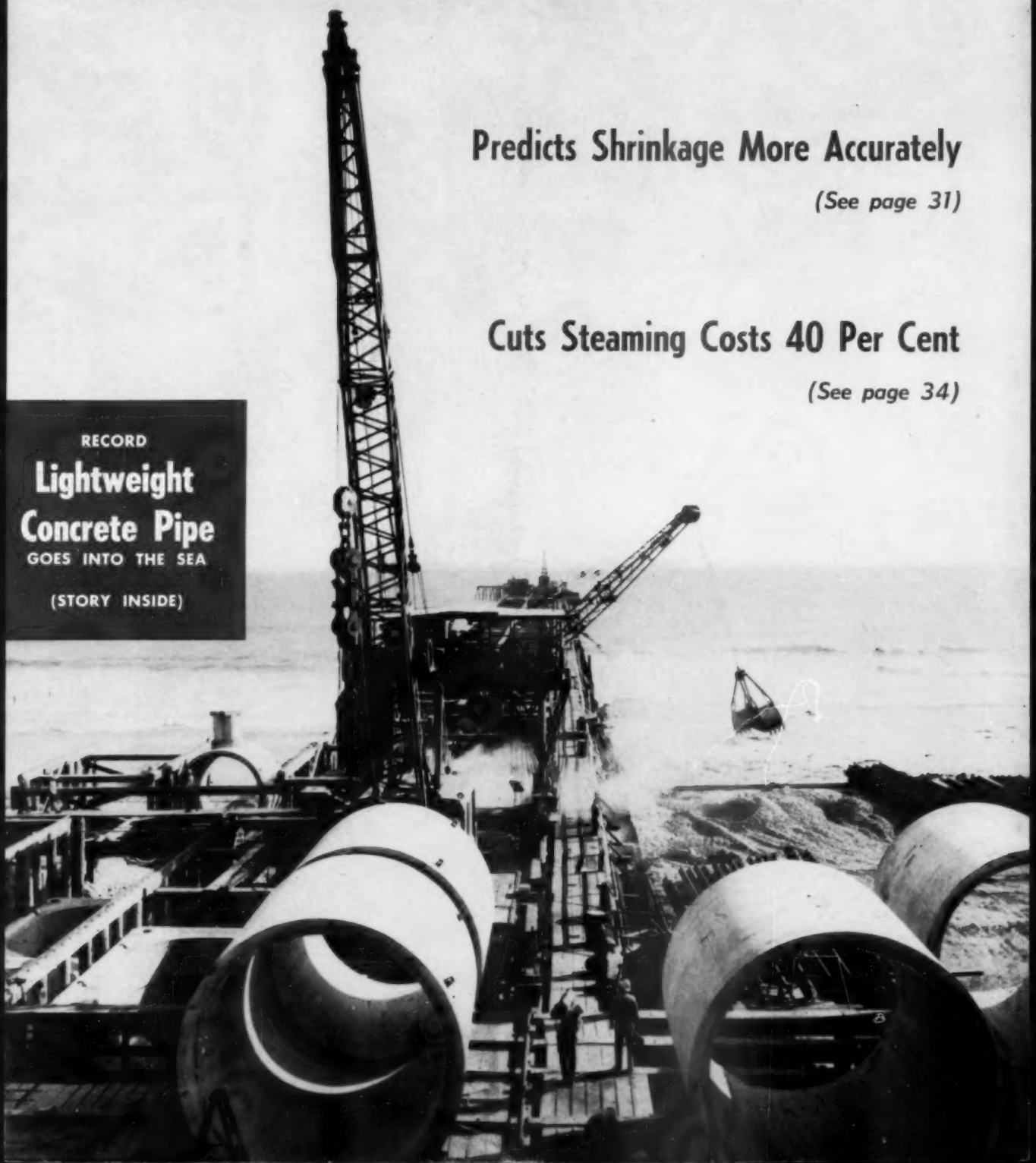
NOVEMBER 1957

CONCRETE

For producers of precast and prestressed concrete products and ready mixed concrete



Predicts Shrinkage More Accurately

(See page 31)

Cuts Steaming Costs 40 Per Cent

(See page 34)

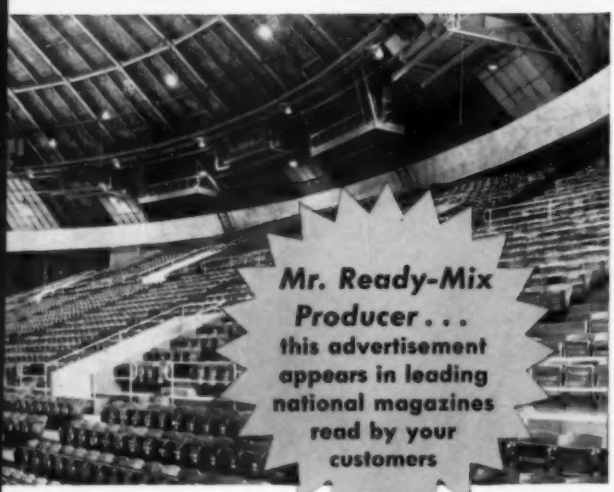
RECORD

Lightweight Concrete Pipe

GOES INTO THE SEA

(STORY INSIDE)

Municipal Auditorium and Coliseum, Charlotte, N. C.
Archt. — A. G. O'Dell, Jr. & Associates, Charlotte, N. C.
Struct. Engr. — Severud, Elstad, Krueger, New York, N. Y.
Contr. — Thompson & Street Co., Charlotte, N. C.
Pozzolith ready-mixed concrete — Concrete Supply Co., Charlotte, N. C.
Below — view of 2500-seat auditorium.
Bottom Photo — section of 13,500-seat coliseum.



Mr. Ready-Mix Producer . . . this advertisement appears in leading national magazines read by your customers

Concrete of good appearance and other desired qualities with POZZOLITH*

In the construction of this outstanding municipal auditorium and coliseum — as with many other important projects built since 1932 — Pozzolith proved a valuable aid in improving cohesiveness and plasticity, to enhance the appearance of exposed concrete.

Beauty and utility with architectural concrete is but one of the advantages obtained with Pozzolith . . . key to the control of:

1. water content . . . makes possible lowest water content for a given workability.

2. entrained air . . . provides optimum air content without sacrificing other desired qualities.

3. rate of hardening . . . provides desired handling and finishing time under widely varying job conditions.

Any one of our more than 100 seasoned fieldmen will be glad to demonstrate the full benefits of Pozzolith for *your* project, and to advise of the availability of Pozzolith Ready Mixed Concrete through more than 1000 qualified producers.

* POZZOLITH — registered trademark of The Master Builders Company for its time-tested water-reducing, air entraining admixture for concrete.

THE MASTER BUILDERS CO.
DIVISION OF AMERICAN-MARIETTA CO.

General Offices: Cleveland 3, Ohio • Toronto 9, Ontario • *Export:* New York 17, N. Y.
Branch Offices In All Principal Cities • *Cable: Mastmethod, N. Y.*

Here's why you get more payload, greater profit with a Blaw-Knox Trukmixer

Every part of these new Blaw-Knox Trukmixers is designed to give you the most compact, accessible truck mixer or agitator possible. The Blaw-Knox Hi-Boy will give you a maximum payload within legal limits on the shortest possible wheel base. By mounting the transmission at the end of the combination pedestal water tank, and the engine at the rear, the distance from the front of the mixer to the loaded center of gravity was reduced 20". This made possible a shorter wheelbase and a more maneuverable truck, since the load is distributed evenly between the axles.

For greater safety and easy maintenance the engine is mounted on the left side of the mixer. This enables the driver to see the unit when backing the truck and also permits easy accessibility to vital parts.

A new Blaw-Knox water system permits the operator to introduce mix water through the charging end of the mixer as well as through the drum head. This system is designed for easy field conversion from transit mix to job site mixing without alterations to the mixer. To prevent freezing of water in the pump and piping during cold weather operations, a drain cock arrangement for draining the entire system is standard equipment.

For more detailed information on the Blaw-Knox Trukmixer see your Blaw-Knox dealer or write for Bulletin No. 2455-R.

BLAW-KNOX

BLAW-KNOX COMPANY

Construction Equipment Division
33 Charleston Avenue, Mattoon, Illinois

MOTOROLA 2-WAY RADIO COSTS YOU NOTHING

Your driver spends a good two minutes every hour in phone hunting, parking and checking in regularly every day. By eliminating just this, your Motorola radio *pays for itself*—but that's not all. It saves time and money a dozen other ways. In fact, many users report that Motorola 2-way radio control saves them *an hour a day* and more for every truck! And they're glad they chose Motorola—for the pioneer and leader produces equipment that *performs better* and *lasts longer*. Add it up for yourself—you'll see why Motorola 2-way radio costs you nothing—actually *makes money* for you! Why delay any longer? Contact Motorola today.

IF YOUR DRIVER SAVES 2 MINUTES AN HOUR WITH RADIO

HERE'S THE PROOF

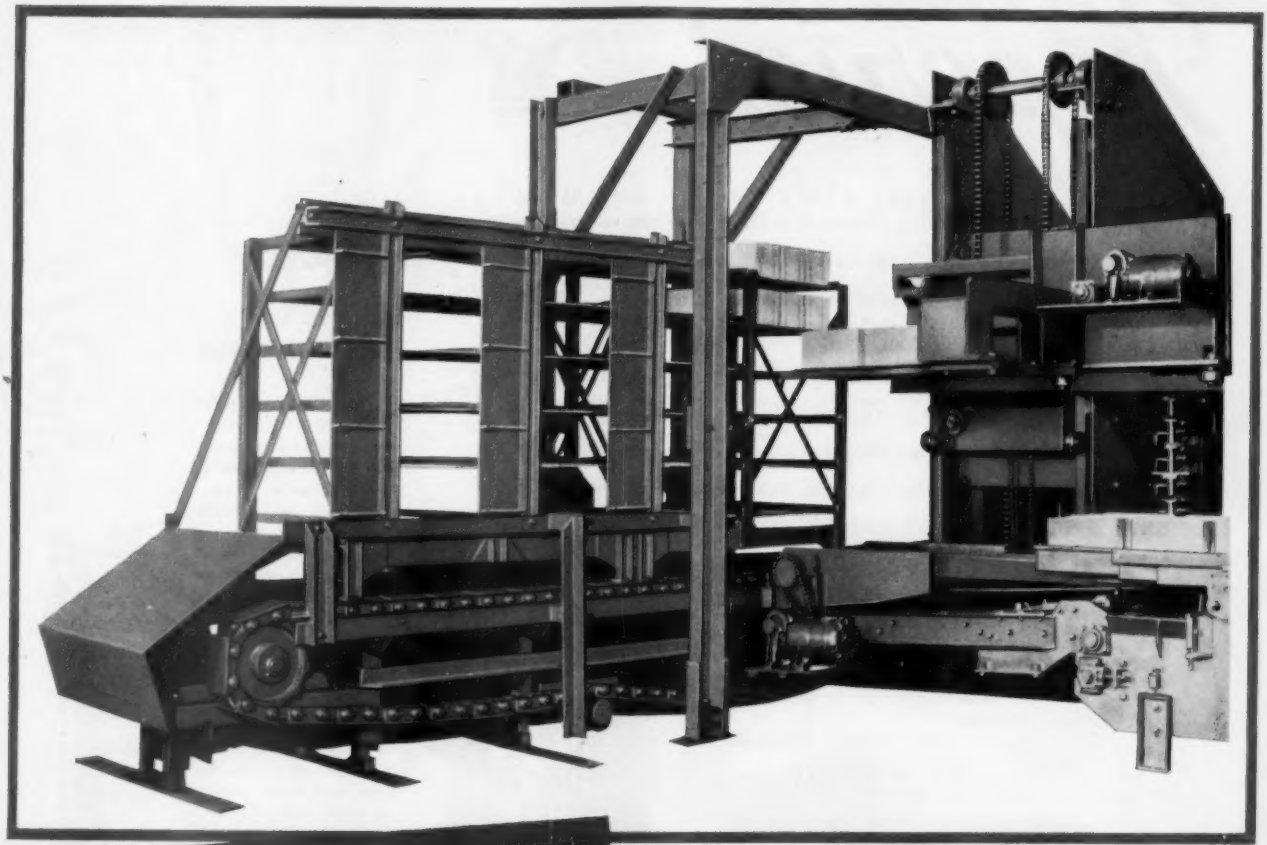
Even if your cost is as low as $5.00 an hour . . . $3.00 for the truck and $2.00 for the driver . . . saving as little as 2 minutes an hour* for each radio-equipped truck will more than pay for your Motorola 2-way radio system, including installation and maintenance. And after three years, the system is all yours!

*Based on ultra-conservative three year amortization schedule.

MOTOROLA *2-WAY RADIO*

MOTOROLA COMMUNICATIONS & ELECTRONICS, INC. • A Subsidiary of Motorola, Inc. • 4501 Augusta Blvd. • Chicago 51, Illinois

®RACKMAN by GOCORP...AUTOMATIC RACK LOADER HANDLES BLOCKS AS FAST AS YOU CAN MAKE 'EM!



PAT'S PENDING

The only rack loader proven by more than two years in the field

HIGHER PRODUCTION . . . FEWER CULLS

RACKMAN is keyed directly to the cycle of your block machine for continuous auto-operation • **RACKMAN** speeds production of any block machine even **GOCORP's "SUPER" TRUSTEE** (there is no faster machine on the market) • No time outs due to the human factor • No offbearing culls • Smooth, efficient, economical operation from mixer to rack • **NO PITS REQUIRED** • Compact design uses minimum floor space.

A companion piece to the RACKMAN "Loader" is the RACKMAN "Unloader".

RACKMAN AUTOMATICALLY removes green blocks from your block machine and indexes them gently onto the decks of the rack.

RACKMAN AUTOMATICALLY removes empty pallets and returns them to the front pallet feeder of the block machine.

RACKMAN AUTOMATICALLY shifts racks. Your lift truck operator merely puts on the empty racks (with pallets) and takes off the loaded ones.

RACKMAN may be used with most high production machines.

WRITE TODAY FOR THE NEW FOLDER ON RACKMAN BY GOCORP . . . FIELD TESTED FOR MORE THAN TWO YEARS

OTHER COST CUTTING GOCORP EQUIPMENT

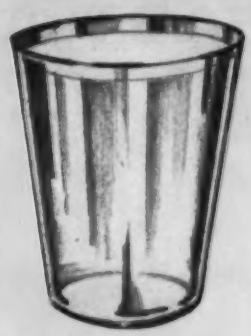
TRUSTEE and "Senior" plain pallet block machines ($14,000 to $40,000) • Cored pallet Block Machines • Batch Mixers—12-75 cu. ft. • Skip Loaders • Block Cubers • Magnetic Offbearing Hoists • Other Supporting Equipment.

GO CORP
ADRIAN-MICH.

805 GRACE ST., ADRIAN, MICHIGAN
Phone COllege 5-7165 Cable "GOCORP"

NEVER A RIPPLE!

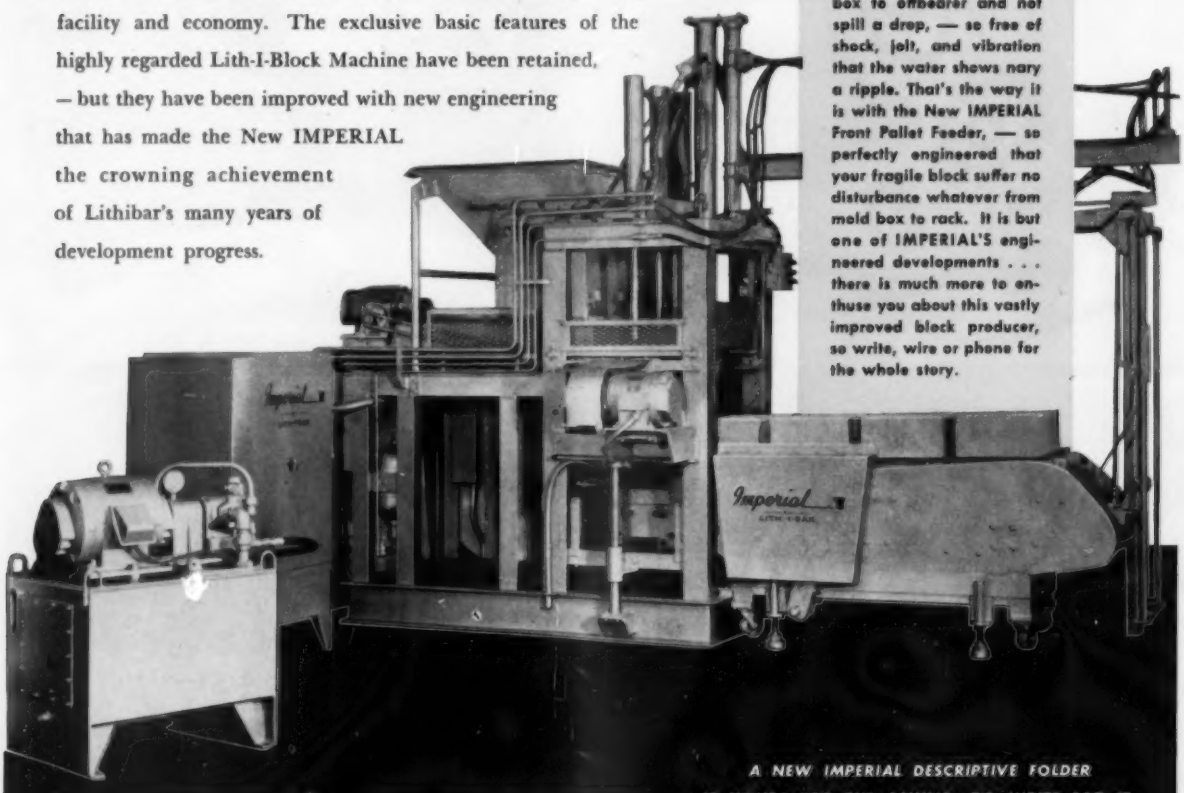
Imperial



A GREAT NAME, heralding a Great New Day of low cost volume production of flawless block . . . a Great Machine that has been engineered to meet the challenging needs of obtaining the highest profit margins with the least of capital expenditure. The New IMPERIAL is now ready to go to work for you — in three- and two-block models, — the only fully automatic, hydraulic producer in its class with a front pallet feeder and off-bearer that are the perfected answers to greater production facility and economy. The exclusive basic features of the highly regarded Lith-I-Block Machine have been retained, — but they have been improved with new engineering that has made the New IMPERIAL the crowning achievement of Lithibar's many years of development progress.

UNCANNY SMOOTHNESS

. . . so smooth that a tumbler of water can ride a front feed pallet from mold box to offbearer and not spill a drop, — so free of shock, jolt, and vibration that the water shows nary a ripple. That's the way it is with the New IMPERIAL Front Pallet Feeder, — so perfectly engineered that your fragile block suffer no disturbance whatever from mold box to rack. It is but one of IMPERIAL'S engineered developments . . . there is much more to enthuse you about this vastly improved block producer, so write, wire or phone for the whole story.



A NEW IMPERIAL DESCRIPTIVE FOLDER IS YOURS FOR THE ASKING; DO WRITE FOR IT.

"I regard the new Imperial as the best possible answer to the question of what my plans are for this company. Nothing has been spared to make this the finest machine in its field, and I am satisfied none other can compare with it in value and performance."

Leonard O. Zick
President and
General Manager

THE LITHIBAR COMPANY
HOLLAND, MICHIGAN

November 1957 CONCRETE

VOL. 65, No. 11 • EST. 1904 • PUBLISHED MONTHLY BY CONCRETE PUBLISHING CORP. • 400 W. MADISON ST., CHICAGO 6, ILL. • Central 6-8822

FEATURES FOR THIS MONTH

Lightweight Concrete Pipe 23

320 sections of record-size lightweight concrete pipe go into the sea off the California coast. Rocklite coated expanded shale aggregate used in these 14-foot, inside-diameter sections reduced the weight of each section by one-third over ordinary concrete pipe; and this reduction in weight effected an approximate savings of one-third in the cost of laying. (Cover picture shows some sections standing on wooden trestle.)

Curing Concrete Units 24

This is the second and concluding part of an extensive article on the various methods of curing concrete units. First installment of this article appeared in the October issue of CONCRETE. By William Grant.

Communication: Plant Efficiency 28

To reduce the possibility of misinterpretation of words, O'Laughlin Ready Mix Concrete Company has developed a system of numbers for use over its extensive range of communication devices.

What's the Modified British Shrinkage Test 31

This article gives a short history of, and what's involved in, the modified British test for shrinkage. This test was recently adopted by the Corps of Engineers.

Truck Drivers: Winterize Your Driving 32

Listed here are some of the more prominent hazards associated with winter driving. Also listed, in the hopes of reducing winter driving accidents, are the seven rules developed by the National Safety Council's committee on winter driving hazards. By Ken Dougherty

Plant Modernization Increases Economy 35

The story of how recording thermometers installed on each of the new kilns at the J. R. Asbell Block Company helps effect a considerable savings in the production of its block. By B. B. Ritchey

A Time to Look at Costs—Editorial 56

Reviewing plant operations for possible economies is always a prime function of management. And with today's mounting costs and increasing competition in both the concrete products and ready mixed concrete industries, such a continuing review becomes increasingly important.

DEPARTMENTS

Industry News 17

Calendar 19

Plant Notes 20

Cement Briefs 21

Everybody's Business 22

Book Reviews 40

News from the Manufacturers 42

New Literature 52

Index to Advertisers 55

DOUGLAS LEE, EDITOR

DONALD T. PAPINEAU, Publisher

NBP

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VAC

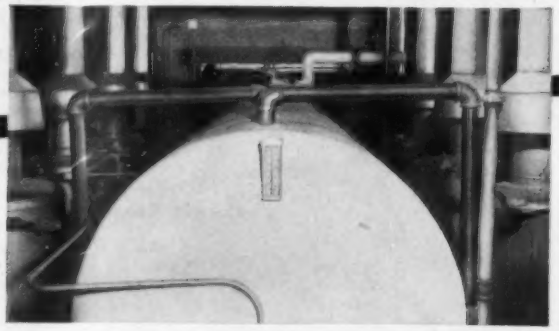
A REPORT

Burkays Provide Enough 160° Hot Water for 90 cubic yards of concrete per hour during peak loading periods at the Grand Rapids Gravel Co. Grand Rapids, Michigan

This plant is capable of loading fifteen six-cubic-yard trucks per hour . . . one every four minutes. Each six cubic yard load of concrete requires about 200 gallons of 160° water. This includes water added at the batcher plant with the mix and water needed for cleanup . . . a total of 3,000 gal/hr.

It was decided that to supply sufficient hot water, at an inlet temperature of 40° and an outlet temperature of 160°, eight Model 718 A. O. Smith *Burkay* water heaters and an 1800 gallon storage tank would be used. This combination of units and storage tank would supply 3,972 gallons for the first hour and right after the lunch hour. The 972 gallons of surplus hot water remaining in the storage tank after a peak period and the total heater capacity of 2,712 gal/hr. would be sufficient to carry the load. Another Model 718 *Burkay* in a closed system (filled with permanent anti-freeze) is used for radiant heating of the aggregate bins for easier material handling.

This installation was designed by the Radiant Heating and Supply Co., of Grand Rapids.



Successful Redi-Mix operation in coldest weather

USING PLENTY OF HOT WATER

generated economically by reliable

Burkay®
GAS-FIRED
WATER HEATERS

Burkay Model 718

Burkay industrial water heaters are of "all copper," corrosion-free construction • Highly efficient patented burner • Exclusive heat exchanger for maximum heat transfer and economy • Dependable • Long Life • Compact • Operates on all gases • A.G.A. approved • Bears the A.S.M.E. seal of approval • Completely automatic • Complete range of sizes to fit your needs. • Fully guaranteed. A good investment.

• At approximately one-half the initial cost of a central steam unit and operating daily, by comparison, at a considerable savings, the *Burkay* hot water installation has fully proved itself to the Grand Rapids Gravel Co. The system has been in operation since October, 1956, and is meeting all expectations.

You, too, can operate year 'round . . . and profitably. Freezing temperatures need not bring your winter Redi-Mix operation to a halt. Not when you can have all the hot water from *Burkay* water heaters that you want, when you want it, and at any temperature you want so that the concrete can set before it freezes. You can supply builders and contractors through the year on schedule.

Rugged *Burkay* gas-fired industrial water heaters are the simple answer to mixing concrete dependably during freezing weather. The entire heater operation is automatic. *Burkays* require minimum care and maintenance. They fit in any out-of-the-way place. Any number of heaters can be connected to get the volume and temperature of water you need. Call your A. O. Smith distributor for full details and application recommendations.

Through research A.O. Smith *. . . a better way*

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CORPORATION
PERMAGLAS DIVISION • KANKAKEE, ILL.
International Division, Milwaukee 1, Wisconsin

Send for FREE information

A. O. SMITH CORPORATION
Permaglas Division, Kankakee, Illinois Dept. C-1157
Gentlemen: Please send me full details on Burkay gas-fired industrial water heaters for any Redi-Mix plant.

Name.....Title.....
Company.....
Address.....
City.....Zone....State.....

makers of famous **Permaglas®** *glass-lined water heaters...* **Permaglas®** *heating and cooling*

Today's Growing Concrete Block Market Means

MORE PROFITS For You!

A COLUMBIA 12″-HIGH WILL GET A BIGGER SHARE OF THESE PROFITS FOR YOU . . . new faces, a variety of special shapes and sizes in concrete units continue to open up new markets for the alert, progressive block plant operator!

You can cash in on the growing demand of this expanding market . . . a market made possible by COLUMBIA'S creation of the 12″-HIGH . . . the one block machine on the market that successfully produces all three: 4″-high, 8″-high, as well as 12″-high units in a wide variety of shapes and sizes —*Roman brick, Norman tile, silo staves, water meter boxes, flue liners, partition block, hexagonal drain tile, prestressed units, fence posts, specially designed face blocks, and other special shapes.*

The COLUMBIA 12″-HIGH—the one-machine block plant—operating at 4 to 6 cycles has the production capacity needed to meet the demand. The electronically-controlled, fully-automatic 12″-HIGH is powered by positive hydraulic action. Super-fast agitation with electronic height and density control, assures uniform delivery of the aggregate to the molds to give continuous production of quality block.

The 12″-HIGH is extremely compact, occupying only a minimum of plant space giving the *highest production per square foot of plant space occupied* as well as *per dollar invested* . . . it will out produce any machine regardless of price.

IT'S EASY TO OWN A COLUMBIA 12″-HIGH. The *low original price* represents an easily amortized capital investment. *Flexible "pay-as-you-depreciate"* plan makes you the owner of this profitable piece of concrete manufacturing equipment on an *easy-to-pay* basis.

There is a Columbia representative in your area . . . for information call, write, wire

Columbia MACHINE Home Office: 107 S. Grand, Vancouver, Wash.

Factory Branch and Warehouse: MATTOON, ILLINOIS Parts Depot and Office: BURBANK, CALIFORNIA

MANUFACTURERS AND WORLD WIDE DISTRIBUTORS OF A COMPLETE LINE OF PLANT EQUIPMENT FOR PRODUCTION OF CONCRETE PRODUCTS

CEMENT SILOS
BATCH BINS
ELEVATORS
SKIP HOISTS
OFF BEARERS

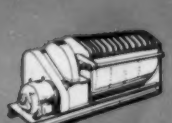
BLOCK SPLITTERS

MAGNETIC RETURN

3-BLOCK

2½-BLOCK

2-BLOCK


BATCH MIXERS

PALLETS • RACKS
PRECISION MOLDS
TURNTABLES
PUMPING UNITS
CLEANERS & OILERS

13 FT. "TO-THE-SPOT" CHUTE speeds pouring of many jobs like this Texas driveway.

12 CU. YD. BATCHES speed 14 million dollar improvement of New York's Idlewild Airport.

FAST, THOROUGH MIX AND A FAST, CLEAN DISCHARGE: You get both with a Jaeger, no matter if it's up-hill. Model shown is a horizontal-drum type, with rear-lift hoist.

Above all its other advantages a Jaeger mixes better concrete

It is important to know that today's Model "F" Jaeger is lighter, mounts to better advantage, is faster to operate and costs even less than previous models to maintain.

But, most important, this latest Jaeger gives you, unchanged, the Jaeger "Dual Mix" drum and action that have out-mixed all other truck mixers ever since the famous Hollister tests.

END-TO-END DUAL MIXING, by which the Jaeger drum achieves higher strength, more workable concrete, results from a design combination found in no other truck mixer. This combination has been developed, perfected and proven over the nearly 30 years since Jaeger pioneered the truck mixer:

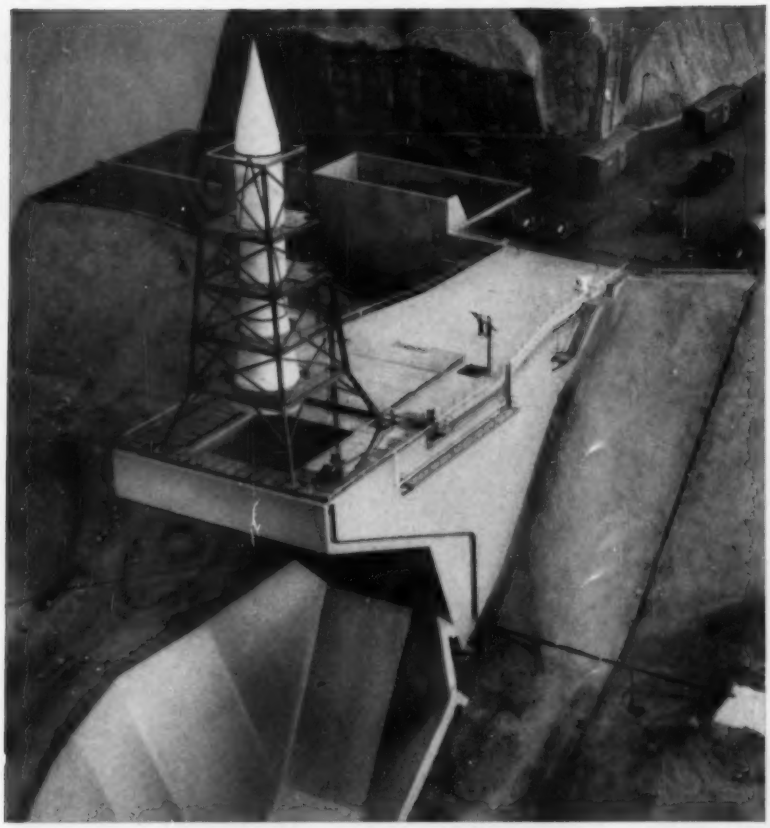
1: **Short, double-coned drum having correct ratio of diameter to length.**
2: **Continuous mixing spirals of 12" minimum width.**
3: **Exclusive Jaeger "throw back" blades which reverse the mix.**

You can easily see the difference. When Jaegers and other mixers are used on the same short haul pour, operators are usually astonished at how much less time a Jaeger needs to "make a mix." It shows up, again, in Jaeger's much faster speed of discharge, often saving several minutes where low-slump specification concrete is being poured.

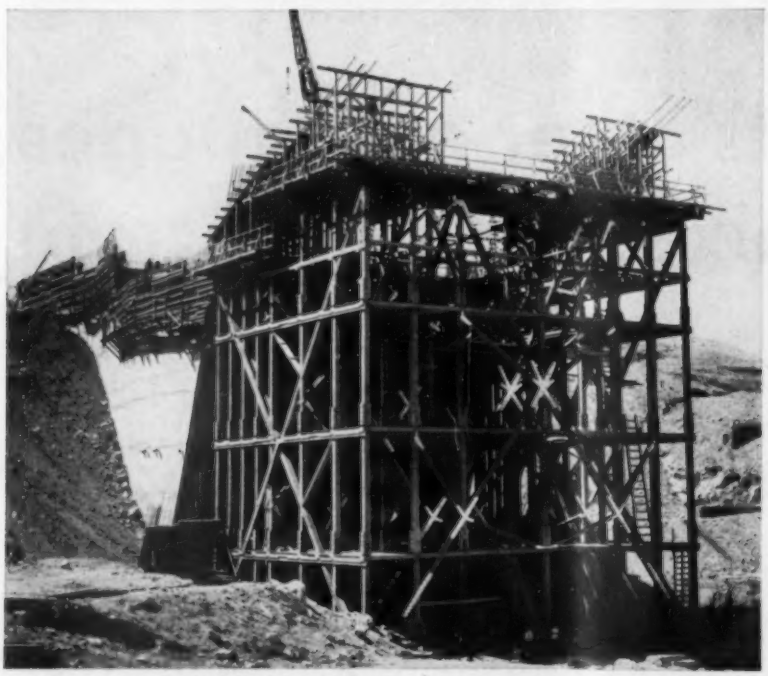
JAEGER'S 3-SPEED TRANSMISSION provides 1½ rpm to 16 rpm drum speeds at proper engine speeds — a complete range for charging, mixing and discharging under all conditions. Loader hoppers, drum opening and blades all are designed to permit the fastest intake and discharge of material of any mixer built today.

For more complete information, on which to base your selection of a truck mixer, talk to your Jaeger distributor—or ask us to send Specification TMS7.

THE JAEGER MACHINE COMPANY
522 Dublin Avenue, Columbus 16, Ohio
Jaeger Machine Company of Canada, Ltd., St. Thomas, Ontario



MODEL of experimental rocket engine test station, Air Research and Development Command Flight Test Center, Edwards Air Force Base. Criteria established by Rocket Engine Test Laboratory, R. F. Gompertz, Chief. Designed by the Ralph M. Parsons Co., Los Angeles. Contractor, George A. Fuller Co., New York and Los Angeles. Concrete subcontractor, Carbro Construction Corp., Los Angeles. Construction supervised by Los Angeles District, C. of E., U. S. Army.



TIMBER FALSEWORK TOWER, 100′ high, supports concrete forms for cantilever. Because of the great mass of the cantilever arms, they were cast in increments; first a 15′ lift, 3 successive 7′ lifts, and a final 4′ lift.

Concrete cantilever takes 1,000,000 lb. rocket thrusts

CANTILEVERED out 52′ from a hillside in the Mojave Desert, a huge concrete test stand speeds U. S. rocket development. Its spectacular cantilever, built of massive concrete which eliminates resonant vibration, can resist the fury of 1,000,000 lb. thrust rocket engines, and provides 150′ clearance between the test platform and flame-deflection pit for preliminary tests of rocket engine jettisoning.

The 52′ cantilever is 70′ wide, measures 40′ thick at the haunch and 15′ at outer end. Test stand is 203′ long, and goes deep into the hillside to reach granite bedrock. Deepest footing, 146′ below the deck, is 10′ thick, 30′ wide, 120′ long.

The installation required 26,000 cu. yds. of low slump (2″) concrete. To meet a fast production schedule, form work was done by day shift and concreting at night, by continuous pours which averaged 250-350 cu. yds., the maximum being 750 cu. yds. Efficient production was facilitated by using ready mixed concrete, processed in truck mixers of certified design, capacity, mixing speed and water control accuracy.

5½ CUBIC YARD
MIXER
MAXIMUM CAPACITY
CERTIFIED BY THE TRUCK MIXER MANUFACTURERS BUREAU TO COMPLY WITH ITS STANDARDS FOR TRUCK MIXERS AND AGITATORS AS APPROVED BY THE N.R.M.C.A.
7¼ CUBIC YARD AGITATOR
UNLESS RATED LOWER ON THE MANUFACTURER'S DATA PLATE

You have a right to insist on this Rating Plate. It certifies compliance with the high industry standards maintained for your protection by the Truck Mixer Manufacturers Bureau.

BLAW-KNOX CONSTRUCTION EQUIPMENT DIV.
Mattoon, Ill.
CHAIN BELT COMPANY
Milwaukee, Wis.
CHALLENGE MANUFACTURING CO.
Los Angeles, Calif.
CONCRETE TRANSPORT MIXER CO.
St. Louis, Mo.
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THE T. L. SMITH COMPANY
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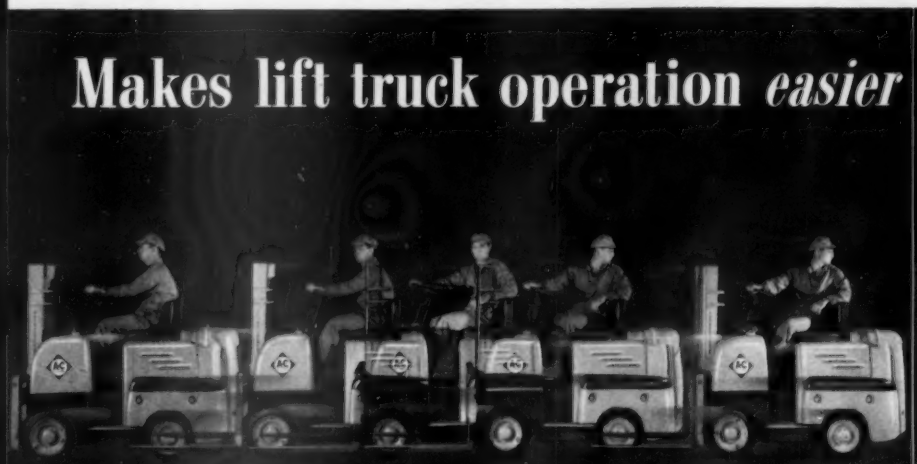
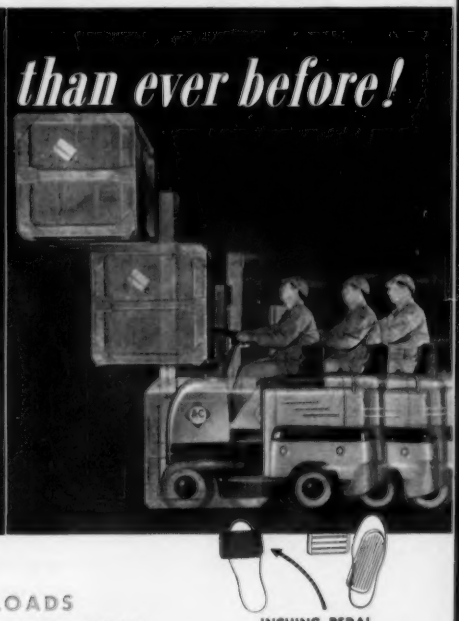
WHITEMAN MANUFACTURING CO.
Pacoima, Calif.
WILLARD CONCRETE MACHINERY CO., LTD.
Lynwood, Calif.
WORTHINGTON CORPORATION
Plainfield, N. J.

NEW ALLIS-CHALMERS POWER SHIFT

TORQUE CONVERTER DRIVE

Makes lift truck operation *easier than ever before!*





SIMPLE FLICK OF A LEVER CHANGES DIRECTION — *SMOOTHLY*

Just flip lever ahead for forward, back for reverse — with light finger-tip touch. You'll be surprised how fast and smoothly you change directions, without jerking. You work fast, stay fresh, get more done.

ENJOY *NEW* SAFETY OF OPERATION

Have full control — ALWAYS, with every move forward or reverse made under constant, positive power coupling. No coasting, no dangerous delay between power application and braking.

Brake to stop — merely release pedal to restart. Applying brake pedal, at left of accelerator, does not break power coupling. This saves time and effort stopping and starting.

There's additional safety in two new features: engine will not start while truck is in gear — and POWER SHIFT Drive automatically returns to neutral if operator leaves the seat.

POSITION LOADS QUICKLY, ACCURATELY WITH NEW INCHING CONTROL

Inching pedal lets you move fast or just creep, always under *full, positive* control. With this you also have *full engine power* for fast lifting, even while inching.

MULTIPLY WORK CAPACITY, INCREASE GRADABILITY WITH TORQUE CONVERTER DRIVE

The torque converter, on all Allis-Chalmers trucks with POWER SHIFT Drive, automatically matches power to load, multiplies working ability, increases gradability.

SIMPLICITY, RELIABILITY, TOO

POWER SHIFT Drive is simple to operate and service — dependable, too.

Get the complete story on how POWER SHIFT saves time, makes driving trucks easier, helps get more done. See your Allis-Chalmers material handling dealer... or write for Bulletin BU-465.

Here's new smoothness of operation — with more speed, less fatigue.

ALLIS-CHALMERS, MATERIAL HANDLING DEPT., BUDA DIVISION, MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS

BH-59

let's talk turkey about your business

It's a good time — as the year comes to an end — to take stock of your business operation. And especially, your *new business* operation. In these days of stiffer competition and rising overhead, the costs of finding new business have gone up steadily. That's why it's more important than *ever* to concentrate your efforts where you *know* there's business to be had. And that's why you need *Dodge Reports!* They tell you in advance what jobs are coming up in the construction field that will interest you . . . and whom to contact about getting them.

If you'd like to see how to get more and better business, just read and mail this coupon today!

TO: **DODGE REPORTS,** DEPT. 69, 119 WEST 40th STREET, NEW YORK 18, N. Y.

Yes! I'd like to see how to get more business by knowing in advance who's going to build what, when, where.

I want to know whom to contact and when to submit bids.

I'd like to see some Dodge Reports and I'd like a copy of your booklet that tells how to use this accurate, daily, up-to-the-minute construction news service.

I understand that I can pick just the area and type of construction activity that interests me. Also, that I won't have to wade through piles of extraneous data to find the information I need.

I'm interested in General Building ☐
House Construction ☐
Engineering (Heavy Construction) ☐

in the following area:_____

NAME_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

Dodge Reports
For Timed Selling to the Construction Industry

★ This is the 142nd of a series of ads featuring leaders in the Concrete Products Industry who are stepping up block production with Besser Vibrapac machines.

Another LEADER in the Block Industry...

Far-away New Zealand Block Plant Specifies BESSER VIBRAPACS

A New Zealand firm, Vibrapac Blocks Limited, has proven unusually successful in the business of producing high quality concrete block. As their name implies, they operate two Besser Vibrapacs . . . one installed in 1951 at their Christchurch plant and another one added recently at the Dunedin plant.

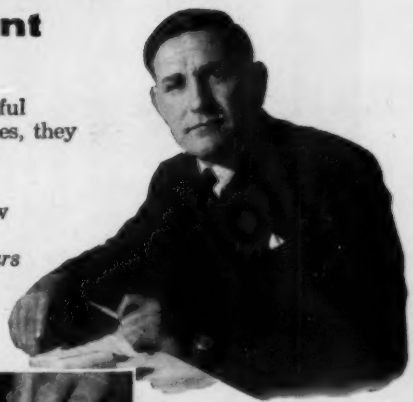
Although 11,000 miles from the Besser factory at Alpena, this progressive New Zealand firm has been able to keep their Vibrapac going continuously. General Manager J. D. Broome states: *"Our Vibrapac machine, as you know, is five years old, during which time it has not had a major breakdown of any kind . . . I am convinced, after a recent visit to your country, that the Besser Vibrapac is pre-eminent in the world in the field of concrete block machines."*

If you want to produce quality block with assurance of continuous, uninterrupted production, you can always rely on Besser Vibrapacs. Why not get all the facts? Contact your nearby Besser representative — today.

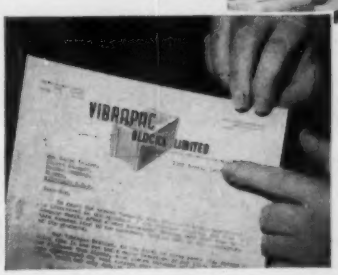
BESSER Company

Dept. 127, ALPENA, MICHIGAN, U. S. A.

First in Concrete Block Machines



J. D. Broome, General Manager of Vibrapac Blocks Limited, Christchurch, New Zealand.



What's in a name? This progressive New Zealand plant chose "Vibrapac Blocks Limited," in order to cash in on the Besser Company's extensive promotion of Vibrapac Block.

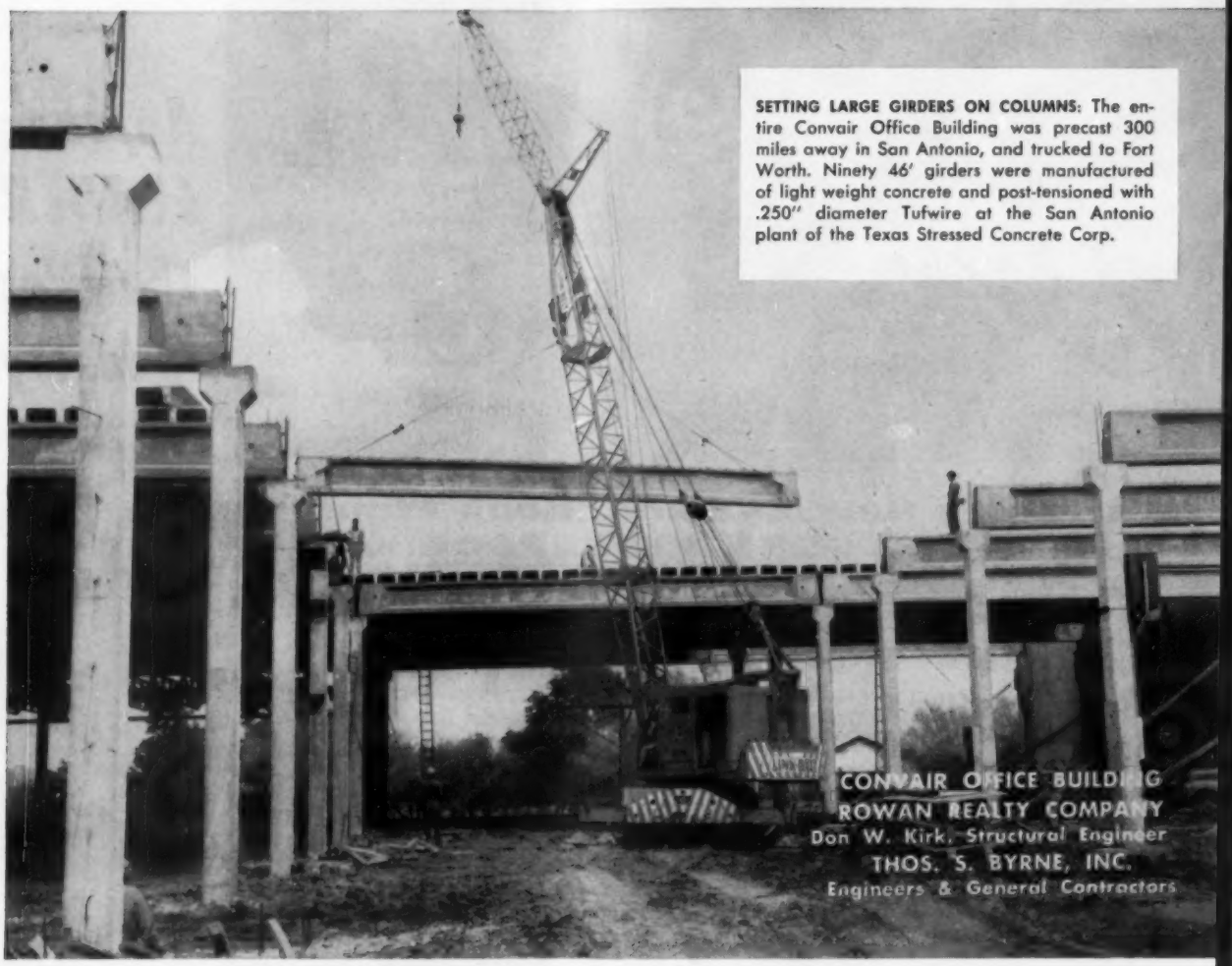
Yard scene showing cubes of Vibrapac Block, in neat piles, ready for delivery.

One of the Besser Vibrapacs in the New Zealand plant. Off-bearer is ready to remove green block with help of Besser Power Off-bearing Hoist.

Lift truck raising a cube of Vibrapac Block onto delivery truck.

A7-142

Prestressed Concrete Building



SETTING LARGE GIRDERS ON COLUMNS: The entire Convair Office Building was precast 300 miles away in San Antonio, and trucked to Fort Worth. Ninety 46' girders were manufactured of light weight concrete and post-tensioned with .250" diameter Tufwire at the San Antonio plant of the Texas Stressed Concrete Corp.

Products Manufacture and Erection: Texas Stressed Concrete Corporation, San Antonio, Texas

Completed in 4 Months—Despite Record Rains

The rains came. For 22 days the construction business in Fort Worth, Texas, slogged through a deluge that meant delays ranging from slow-downs to shut-downs. You can't pour concrete in the rain.

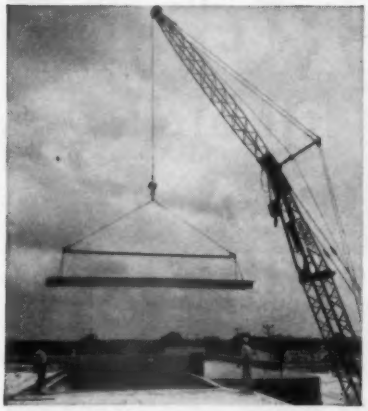
In the midst of this, an outstanding advantage of prestressed concrete construction was dramatically demonstrated — speed of erection even under adverse conditions.

The 102,000 sq. ft. Convair office building and warehouse is the case in point. The prestressed concrete structural members were erected in 13 working days — rain or no rain. The building was complete—offices, air-conditioning and all — in less than four months.

Speed of erecting is only one of many advantages that make prestressed concrete the miracle building material. Others are: great strength-to-weight ratio; less concrete needed; greater recovery after overloads; thinner sections; on schedule transportability of prestressed members; longer spans; permanence of concrete PLUS amazing flexibility and elimination of cracking; adaptability as unlimited as the imaginations of architects and engineers. Today, prestressed concrete is being used in a range of applications from fence posts to giant bridges and multi-story buildings; from movable parking lot curbs to airport runways.

Advances in the development of better high tensile strand and wire by Union Wire Rope Corporation have contributed heavily to the booming trend to prestressed construction. Once the problem of dependable tensioning materials was whipped, the way was opened wide for the "new age of concrete."

Erected In Only 13 Days



CLOSE-UP OF DOUBLE TEE BEING SET: Tuffy Slings were used as shown in placing 920 of these 4' double tee slabs. Slabs were made from lightweight concrete using Union Wire Rope "Tufwire" strand.

BUILDING ALMOST CLOSED IN: Work progresses steadily in the dreary rain as another double tee is hoisted into position. The roof structure was designed for parking. It was given a thick asphalt wearing surface.

LAST OF THE DOUBLE TEES ARE HOISTED FROM TRUCK completing roof for asphalt surface.

How Will You Share in Vast New Markets Opening For Prestressed Concrete Makers?

Looking for a new route of expansion? Want to get in on an industry that's expanding at a tremendous pace every year, with a future of fantastic dimensions? Prestressing offers opportunities not only to the on-site contractor, but also to the contractor who would like to operate a permanent casting yard as an arm of his business or as a commercial fabricator. Here are some of the opportunities:

OPPORTUNITIES in Buildings: Structures of just about every description are being built better with prestressed concrete. Office buildings, garages, warehouses, schools, motels, hospitals. Now the walls of multi-storied buildings are being poured in big slabs with openings for doors and windows, then tilted up to position. Floors are poured in "layers" separated by greased paper, then raised to upper floor levels.

OPPORTUNITIES in Bridges: The tremendous National Highway Program now under way calls for 300,000 bridges, most of which can be built much faster and more economically with prestressed concrete than with any competitive building material. Other bridges ranging from a small creek crossing to the world's longest highway bridge are built of prestressed concrete.

OPPORTUNITIES in Highways: Prestressed concrete pavement is already in the advanced experimental stage. The slabs need be only 5 inches thick, as contrasted with the ordinary 10-inch slabs used on many highways. They promise high levels of strength and permanence, speed of construction, savings in time and money. And more profit for suppliers and contractors.

These are just a few of the many uses where concrete prestressed with Union Tufwire strand and wire is proving its structural and economic advantages. Almost anything that concrete will do — it will do better when prestressed with Union Tufwire.

If you're a present user of prestressed concrete, or engaged in making it, let our engineering department and research laboratory give you and your consulting engineers a lift with any prestressing project.

If you're among those who see the big opportunity for a new plant to supply your area, let us help you explore the possibilities.

union
Tufwire®

Stress-Relieved Wire and Strand

Send Now for your FREE Copy of this digest of PRESTRESSED CONCRETE ADVANTAGES from data supplied by a panel of prestressed fabricators

union Wire Rope corp.

2306 Manchester Avenue Kansas City 26, Missouri

Specialists in high carbon wire, wire rope, braided wire fabric, stress-relieved wire and strand.

NAME_____

FIRM_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

MODERNIZE NOW.... with BERGEN BLOCK PLANT EQUIPMENT

OUTMODED, worn equipment slows down production — cuts profits. Why not modernize with new High-Production Bergen equipment? For example, the Bergen Front Pallet Feeder embodies a unique **continuous** Harmonic Drive which moves the block gently and smoothly — without jarring — at any block machine speed, like all Bergen equipment, is designed to give you better block and higher production. You'll surely want to know all about the new design features of the Bergen Front Pallet Feeder as well as Bergen's High-Production Tri-Matic Block Machine.

WRITE
for free literature & prices
or PHONE "COLLECT"
NUTLEY (N.J.), 2-7300

BERGEN MANUFACTURES A COMPLETE LINE OF BLOCK PLANT EQUIPMENT

LIGHT-WEIGHT HOIST
SKIP-HOIST
MASTER CONTROL PANEL
ZEROMATIC HEIGHT & DENSITY CONTROL
MOLD REPAIR TABLE

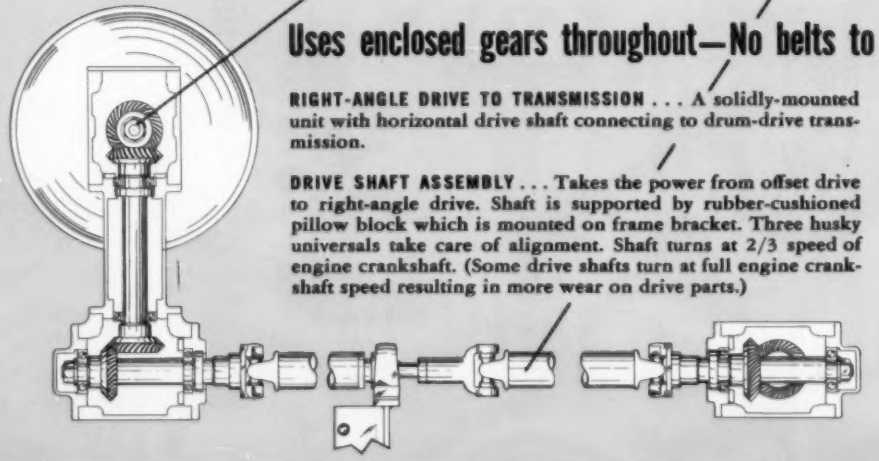
and a full line of plant maintenance equipment, parts, and repair service.

BERGEN
MACHINE & TOOL CO., INC.
NUTLEY, NEW JERSEY
Cable address: "BERGENCO" (Nutley, N. J.)

NOW! Westinghouse Transit Mixers

with the latest development in Truck Engine Drive

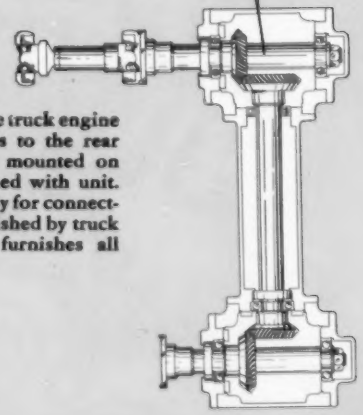
Uses enclosed gears throughout—No belts to adjust, break or wear out!



RIGHT-ANGLE DRIVE TO TRANSMISSION . . . A solidly-mounted unit with horizontal drive shaft connecting to drum-drive transmission.

DRIVE SHAFT ASSEMBLY . . . Takes the power from offset drive to right-angle drive. Shaft is supported by rubber-cushioned pillow block which is mounted on frame bracket. Three husky universals take care of alignment. Shaft turns at 2/3 speed of engine crankshaft. (Some drive shafts turn at full engine crankshaft speed resulting in more wear on drive parts.)

OFFSET DRIVE AT FRONT OF TRUCK . . . This is the drive which transfers power from the truck engine to the drive shaft which runs to the rear along the truck frame. It is mounted on truck frame extension furnished with unit. Engine P.T.O. adapter face only for connecting to offset drive must be furnished by truck manufacturer. Westinghouse furnishes all other parts.



How does Westinghouse Truck Engine Drive compare with others?

On other mixers the offset drives use either "V" belts or cogged rubber belts. Both must be watched carefully for proper adjustment. "V" belts will slip if not in proper adjustment and cog belts will shear teeth and break. Either happening is bad with a load of concrete aboard . . . At right-angle drive some use gears —some use "V" belts which require the same attention as those used in the offset drive.

The Westinghouse drive—most practical introduced to date—uses fully-enclosed gears throughout—spiral bevel gears for full tooth contact and quietness—gears of hardened alloy steel for long life. Gears give you a positive, dependable drive that needs no more attention than the differential on your truck. All shafts run in ball bearings. Universal joints are grease packed. Check lubricant in gear housings occasionally and then forget them . . . No belts to adjust, break or wear out. Why worry with anything less?

Is Westinghouse Truck Engine Drive Adaptable to All Trucks? Yes—the offset drive (shown in Fig. 1) can be fitted to almost any truck provided truck has or can be fitted with take-off face on front end of engine crankshaft and that drive assembly from engine to offset drive can be run under or through hole in radiator.

How About Controlling Engine Speed from Discharge End of Mixer? Since the truck engine powers the drum rotation, engine r.p.m. must be adjustable from the ground. This is accomplished by push-pull cable connected to standard throttle control on mixer and running beneath truck cab to engine carburetor as shown in Fig. 2.

Is Clutch at Front of Engine Available? Yes—as an option at slight additional cost. A push-pull cable with button mounted on truck instrument panel engages or disengages a mechanical clutch built into gear housing directly in front of engine (Fig. 3). Disengagement saves power and unnecessary wear on drive parts in transporting when drum rotation is not necessary or desired. Also facilitates starting engine in cold weather. Must be engaged and disengaged with engine stopped.

What About Range of Drum Speeds? All Westinghouse mixers have a two-speed transmission for regulating drum speed (shown in Fig. 2). It affords a high-speed range for fast charging or discharging and a low speed range for agitating and slow discharge. This feature, plus a reduction built into the offset drive and plus the engine throttle operated at either end of mixer, permits operator to get desirable speeds for any type of operation.

How Does Truck Engine Drive Affect Weight? Mixer with this drive weighs approximately 400 lbs. less than cataloged weight of same mixer with separate engine drive.

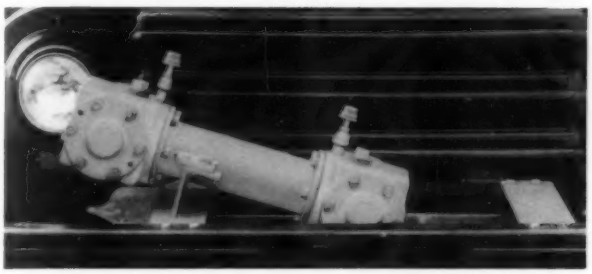


Fig. 1—Enclosed-gear offset drive at front of truck.

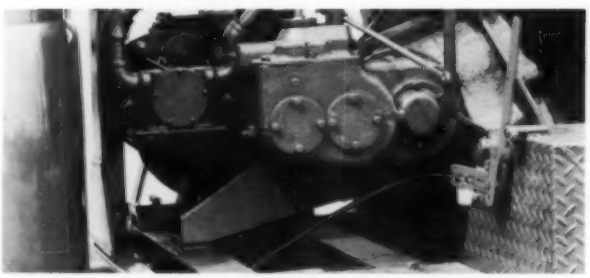


Fig. 2—Engine r.p.m. is controlled by throttle from either end of mixer.

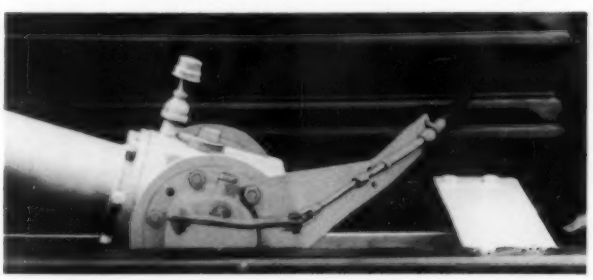


Fig. 3—Shows mechanical clutch which may be installed in front gear housing.

TRANSIT WESTINGHOUSE MIXER

WESTINGHOUSE TRANSIT MIXER DIVISION • LeTourneau-Westinghouse Company • Indianapolis 6, Indiana

Member Truck Mixer Manufacturers Bureau

Mail Coupon for Further Information

WESTINGHOUSE TRANSIT MIXER DIVISION • LeTOURNEAU-WESTINGHOUSE COMPANY
Box 853, Indianapolis 6, Indiana

Have your distributor see me about your new Truck Engine Drive on Westinghouse mixers.

Name_____ Title_____

Company_____

Street Address_____

City and State_____

Form 57S—Printed in U.S.A.

INDUSTRY NEWS

This Year's Safety Contest Winners Are Announced by the National Ready Mixed Concrete Association

Two of the five companies named as winners in this year's National Ready Mixed Concrete Association safety contest were repeats from last year. Three other companies entered as newcomers to the winning ranks this year in the various production classes.

In the order of classes from "A" to "E" (based upon cubic yards produced), the winners were Anderson Concrete Corporation, Columbus, Ohio; J. P. O'Connell Company, Boston, Massachusetts; Stewart & Nuss, Incorporated, Fresno, California; Certified Concrete Company, St. Paul, Minnesota; and Cayll's, Incorporated, Waukesha, Wisconsin.

Anderson Concrete Corporation, for the second year in a row, took top honors in Class A (companies producing over 250,000 cubic yards of concrete during the contest period). The Columbus firm's record was one injury to employees, one injury to non-employees, and three property-damage accidents.

J. P. O'Connell Company, winner in Class B (companies producing between 100,000 and 250,000 cubic yards during the contest period) ended the year with no employee injuries, no injuries to non-employees, and only two property-damage accidents.

Stewart & Nuss, Incorporated, again won out over its Class C competitors. This was their third successive winning year and the fourth time they have won in the last five years. This year 10 companies, including Stewart & Nuss, completed the contest period with a perfect record of no accidents and no injuries. Class C is composed of companies producing between 50,000 and 100,000 cubic yards.

Class D winner this year is Certified Concrete Company. Along with 16 other companies, Certified finished the year without accident or injury. Class D producers had a production of between 25,000 and 50,000 cubic yard.

A total of 43 companies in Class E completed the year, ending June 30, 1957, with a non-injury and non-accident record. Based upon total cubic yards of concrete produced and man-hours worked during the period, Cayll's, Incorporated, ended up the winner.

The *Modern Concrete* trophies will be presented to the five winning companies at the NRMCA convention in Chicago next February. Certificates of achievement in safety will be awarded to accident-free companies that did not win a trophy. All production and distribution employees of the five trophy-winning companies will be awarded a certificate of accomplishment in safety.

● National headquarters of Medusa Portland Cement Company were recently dedicated in Cleveland Heights, Ohio. The building is constructed of concrete to demonstrate the unlimited architectural use of concrete.

■

February Meeting of NCPA Will Be Held at Quebec

National Concrete Products Association, Toronto, Canada, has changed the meeting place for its convention February 24 through 26, 1958. The group will convene at the Seigniory Club, Montebello, Quebec, Canada.

About three hundred delegates representing all branches of the concrete products industry and suppliers from Canada and the United States are expected to be in attendance.

■

Two Types of NRMCA Short Courses Offered

Dates for this year's annual short courses at the University of Maryland were announced recently by the National Ready Mixed Concrete Association. Two types of instruction will be offered.

The five days of instruction, beginning November 18, will be similar to courses offered by the association in previous years. Material covered will be fairly broad in scope. Registration will be limited to 75 participants.

A second type of instruction, with emphasis on details of testing and calculation of concrete proportions, will be given during the week of November 11. This course will be limited to 16. (Two similar courses of this type have already been offered—one beginning October 28, and the other beginning November 4.)

Limitations this year were placed on the number of participants in each course because of the increased enrollment at the university. Attendance is limited to active and associate members of the NRMCA.

Form 575—Printed in U.S.A.

City and State _____

Econoplant is ready to start producing in minimum time upon arrival. All-welded bin, self-contained batcher unit, easy field assembly of other structures simplify installation. Maximum erection lift, about 5 tons.

TRANSIT-MIX

Econoplant®

with separate cement scale

Interested in a low-cost entry into the commercial ready-mix field? Or, if you're planning to modernize or expand exsisting facilities, it will pay you to look into the low price and high quality of this new Johnson Econoplant. All-welded 55-cubic yard bin has 3 aggregate compartments (total 45 cu. yds.) and a 70-barrel cement compartment complete with low-pressure aeration system. 180-bbl.-per-hour cement bucket elevator has 3 h.p. gearmotor with roller-chain drive, and boot hopper for bulk or bag cement.

Meets rigid specifications

One of the big *plus* values of this Econoplant is *separate weighing of cement* to comply with exacting requirements for specification concrete. Included in the low price is Johnson's 3 cubic yard Concentric aggregate-cement batcher, manually-operated. It weighs the cement on an *independent* scale, separate from aggregates. Centrally-located, sealed hopper discharges cement *within* the aggregates. This minimizes dusting, and pre-mixes all materials.

Econoplant is ideal for clamshell charging — has large aggregate bin openings. Charging height is only 30½ feet. Where desired, it can be equipped with belt conveyor, open-inclined or vertical-enclosed bucket elevator for aggregates, at additional cost — also auxiliary storage silo, and undertrack screw conveyor system for cement.

Other optional accessories: bin signals, water batcher, water meter — and weather-proof electric control panel for all plant motors (a package unit, requiring only simple field wiring). Want more facts? See your Johnson distributor right away — or mail coupon *today*.

C. S. **JOHNSON** COMPANY
CHAMPAIGN, ILL.

Send us literature on new Econoplant

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TITLE _____
COMPANY _____
STREET _____
CITY, STATE _____

(Koehring Subsidiary) A108W-CON.

CONCRETE PLANTS • BINS • BATCHERS • ELEVATORS • SILOS • BUCKETS

Service Center Opened by Besser in Missouri

Besser Company formally opened its new regional parts store and warehouse, North Kansas City, Missouri, in a ceremony on November 1.

The sixth such Besser Company distribution center, this new facility is being set up to give quick service and technical help to customers in the area bounded on the east by the Mississippi River and on the west by the Rocky Mountains.

Announcement of the new plant was made by Joseph Pinson, Besser Company service manager, Alpena, Michigan. Robert G. Courtney has been named manager of this new store and warehouse.

■

Additions to Staff Are Named by Canadian Firms

Raymond Concrete Pile Company Limited and Raymond International Company Limited, both of Toronto, Canada, recently announced two staff appointments.

Charles E. Lait was appointed as new assistant treasurer and assistant secretary of both companies. William S. Leggat will serve the Raymond International Company Limited as construction manager of western Canada at Vancouver, British Columbia.

■

Microwave Station Is a Tower of Concrete Block

A microwave station constructed of concrete block, located at Leroy, Michigan, is a tower 12 feet square by 43 feet high. Block used in construction were furnished by Western Concrete Products of Cadillac, Mich.

Paul Bunyan Network, WPBN-TV, at Traverse City, Michigan, erected the tower to house their signal transmitting equipment.

Calendar . . .

1957

NOVEMBER 15-16	Concrete Products Association of Washington — Annual Fall Meeting — Cascadian Hotel — Wenatchee, Washington.
NOVEMBER 17-19	Southeastern Concrete Pipe Association — Tenth Annual Convention — Key Biscayne Hotel and Villas — Miami, Florida.
DECEMBER 2-6	American Society for Testing Materials—Committee C-1, Cement, and Committee C-9, Concrete — Fall Meeting — Fortin de las Flores, Mexico.
DECEMBER 6	Oklahoma Ready-Mixed Concrete Association — Annual Meeting — Oklahoma City, Oklahoma.

1958

JANUARY 19-23	National Association of Home Builders — Convention and Exposition — Hotel Sherman and Conrad Hilton Hotel — Chicago, Illinois.
JANUARY 22-23	Wisconsin Concrete Products Association — 38th Annual Convention —Loraine Hotel — Madison, Wisconsin.
JANUARY 24-26	National Concrete Products Association of Canada — Annual Convention — Seigniory Club — Montebello, Quebec, Canada.
JANUARY 27-31	National Prestressed Concrete Short Course — University of Florida — Ellinor Village — Daytona Beach, Florida.
FEBRUARY 9-13	National Ready-Mixed Concrete Association — 28th Annual Convention — Chicago, Illinois.
FEBRUARY 9-13	National Sand and Gravel Association — Annual Convention — Conrad Hilton Hotel — Chicago, Illinois.
FEBRUARY 10-14	American Society for Testing Materials — Committee Week — Hotel Statler — St. Louis, Missouri.
FEBRUARY 17-19	National Concrete Masonry Association — 38th Annual Convention — Chicago, Illinois.

PROFIT FROM YOUR HYSTER DEALER'S EXPERIENCE

AUTOCLAVE HANDLING — Large load capacity, low upright speed kiln charging.

PIPE HANDLING — Pipe safely tipped with swiveling pads on Load-Grab ® pipe forks.

PRECAST HANDLING—Precast bridge beams safely handled with stabilizing arms attached to truck.

These are only some of the problems that have been solved by Hyster dealers. They have a wide knowledge of concrete products handling problems in your area and can help you save time and money on your operations.

Ask your dealer to take a look at your methods today. He can suggest ways to speed handling, relieve production bottlenecks — with the right Hyster lift truck and job attachment.

HYSTER®

Factories: Danville, Illinois; Portland, Oregon; Peoria, Illinois; Nijmegen, The Netherlands; Sao Paulo, Brazil; Glasgow, Scotland; Sydney, Australia (Licensee)

10-Ton Capacity Hydrocrane Gets to the Job Quick as Trucks Delivering Materials

The 10-ton capacity H-5 Hydrocrane, mounted on a standard commercial truck, new or used, travels between jobs as easy as ready-mix trucks . . . easier than many of the big units required for hauling precast beams and slabs. It arrives on the job with or ahead of the materials.

Once on the job, hydraulic outriggers set in seconds to give you full 10-ton crane capacity—*PLUS* hydraulic precision control to reduce damage to materials, structures or equipment; telescoping boom to reach into doors, windows or otherwise inaccessible spots; working boom hoist to allow placing loads under or over obstructions at the touch of a lever.

In addition, hydraulic simplicity of design makes the Hydrocrane easy to maintain, easy to operate. Ask your nearby Bucyrus-Erie distributor to show you why the H-5 Hydrocrane is the most profitable 10-ton crane you can own. If a smaller crane better fits your needs, ask about the 5-ton H-3 Hydrocrane.

188H57

BUCYRUS ERIE

SOUTH MILWAUKEE, WISCONSIN

PLANT NOTES

PRECAST INDUSTRIES, INCORPORATED, Kalamazoo, Michigan, is investing $160,000 in buildings for its new 14-acre site in Kalamazoo. Prestressing operations at the new location have already begun.

JACKSON READY-MIX CONCRETE, Jackson, Mississippi, is completing construction of a lightweight aggregate producing plant. The plant will be in operation in January to provide enough of the aggregate to supply all Mississippi concrete products industries. Future expansion of the company includes construction of prestressed concrete plants in six major Mississippi cities.

TEXAS CONCRETE BLOCK COMPANY, Lubbock, Texas, has opened a Spectra-Glaze plant as part of its operations.

SMITHWICK CONCRETE PRODUCTS, Portland, Oregon, is now operating a processing plant to produce lightweight aggregate near Vernonia, Oregon.

DAVIES CAST CONCRETE, Blacklick, Ohio, became successor to Architectural Cement Products, Incorporated, early last month.

ACME CONCRETE OF POMPANO, INCORPORATED, Pompano Beach, Florida, is the most recent ready-mix concrete plant in Broward County. Acme Concrete has four other concrete plants located in Dade County.

CONCRETE, INCORPORATED, and Goltermann Material Company, both of St. Louis, Missouri, are planning to consolidate with Mississippi River Sand and Material Company, a publicly held Missouri corporation, and PFC Equipment Company, a truck-leasing company. The new corporation will be known as Basic Materials Company with six ready-mix plants and materials yards in St. Louis.

C. F. REPLOGLE, INCORPORATED, of Circleville, Ohio, has set up a ready-mix concrete plant south of Belmont, Ohio, on Ohio Route 9. The plant will supply concrete for a by-pass at the St. Clairsville Route 40 junction.

CEMENT BRIEFS

UNIVERSAL ATLAS CEMENT COMPANY, New York City, has purchased over 1,000 acres of limestone-bearing land near Rochester, Minnesota.

IDEAL CEMENT COMPANY, Denver, Colorado, has acquired Northwestern Portland Cement of Seattle, Washington. Ideal is also building a $1,449,000 plant at West Sacramento, California.

RIVERSIDE CEMENT COMPANY, Los Angeles, California, HERCULES CEMENT CORPORATION, Philadelphia, and PEERLESS CEMENT CORPORATION, Detroit, Michigan, have begun negotiations for a merger of the three companies. Yearly capacity of the combined company would be about 18,500,000 barrels. The merger is expected to be completed in December.

INLAND CEMENT LIMITED, Edmonton, Alberta, Canada, has acquired Saskatchewan Cement Corporation at Regina, Saskatchewan. The acquisition will boost Inland's capacity to 3,000,000 barrels per year.

■

Cement Production

Production of finished portland cement in July 1957 totaled 20,287,000 barrels, according to the Bureau of Mines, U. S. Department of the Interior.

Reports from 132 plants in 37 states and Puerto Rico show that this is a 31 per cent decrease from July 1956. The cement strike hit hardest in the month of July this year, with 50 out of 94 plants shut down east of the Mississippi River and 18 out of 69 shut down west of the Mississippi River.

Mill shipments were lower by 18 percent this month, also. Total shipments in July this year were 25,655,000 barrels compared to 31,333,000 barrels in July 1956. Mill stocks of 24,345,000 barrels of finished portland cement were on hand July 31, 1957, an increase of 18 per cent over the 20,598,000 on hand July 31, 1956.

One of five F-55 Feeders feeding sand and gravel to belt conveyor that supplies batching bins in concrete plant.

SYNTRON
VIBRA-FLOW

VIBRATORY FEEDERS

Reduce costs—Increase production.

Syntron builds a line of bulk material feeders designed for versatility, flexibility, dependability and long lasting service.
The output of Syntron Vibratory Feeders can be regulated to match the capacities of mixers, batchers, screens, conveyor belts and other processing equipment. Their wide range of material flow from a few pounds to hundreds of tons per hour, can be controlled automatically by your operation—response to changes in production schedules is immediate, adjusting material flow to fit the job.
Syntron's years of experience in the bulk materials handling field assures peak performance under almost every condition with almost every type of material—damp or dry, hot or cold, fine sand and cement or coarse gravel with a minimum of maintenance.
Write, giving the details of your materials handling problem and our engineers will work with you in selecting the proper feeder.
Available in Electromagnetic, Pneumatic or Hydraulic powered units.

Builders of Quality Equipment for more than a Quarter-Century.

Other SYNTRON Equipment of proven Dependable Quality

MASS CONCRETE VIBRATORS

VIBRATING CONCRETE FLOATS

HOPPER LEVEL SWITCHES

Write for complete catalog data — FREE

SYNTRON COMPANY
324 Lexington Ave. Homer City, Penna.

Everybody's Business

OUTLOOK

• What with the three S's and an H—Syria, Sputnick, stock market, and Hoffa—there's more than just a driblet of news that's of interest this month. And each of these four items will play a definite role in shaping the short-term future of the U.S. economy.

SYRIA

• Unless the U.S. is shoved to the brink and then over by the crisis in the Middle East, it's probable that the situation in Syria will have the least effect of the four items mentioned above. True; more aid, propaganda, and arms will flow into this area of the world. And these will cost money—tax money, which will make it just that much harder to balance the budget. And without a balanced budget, the chances of a tax cut next year are slim.

SPUTNICK

• One almost-sure thing is that the military planners will put into action a crash program to speed production of rockets capable of carrying a satellite into space or some vehicle to the moon. (And, of course, such a vehicle could easily travel to the opposite side of the earth.) But just such an expensive crash program will also add to the delay of any tax cut.

STOCK MARKET

• Not all of the jitters that have sent the stock market plummeting downward over the last couple of months can be attributed to Sputnick or the Middle East situation. Signs of this impending descent have been around for many months, possibly since the decline in 1956 of sales of automobiles and houses.

• The problem, though, is that without sufficient bolster a declining cycle can get out of hand. Fortunately, movements on the stock market in the past have not always proved to be an accurate indication of business prospects.

• Also, there are still a preponderance of signs pointing to a leveling off of business, rather than a large movement downward.

• Personal income, though it dropped very slightly in September of this year, was still close to the record of $346.8 billion set in August. September's figure was $346.5 billion. This means that people still are earning vast amounts of moneys with which to buy goods and services.

• Housing starts in September were at a seasonally adjusted annual rate of 990,000—considerably up from the adjusted rates of the first few months of 1957.

• Large corporations, and small ones, still are going ahead with plans for expansion.

HOFFA

• Though, at this time, James R. Hoffa has not been able to actually take over the Teamsters because of a court injunction, his prospects are as good as ever. His indicated strength in the election was such that it is improbable any one of his opponents could win even if another election is necessary.

• So jurisdictional disputes and labor strife seem inevitable. Walter Reuther has stated that he believes the AFL-CIO are morally obligated to set up a rival union.

Second Course Scheduled on Prestressed Concrete

The University of Florida at Gainesville, in co-sponsorship with Prestressed Concrete Institute, is presenting the second national prestressed concrete short course at Elinor Village, Daytona Beach, Florida, February 3-7, 1958.

Dr. A. M. Ozell, course supervisor, has announced that the tentative program includes panel discussions on materials, lectures on design, 30-minute talks by producers, and papers on technical subjects.

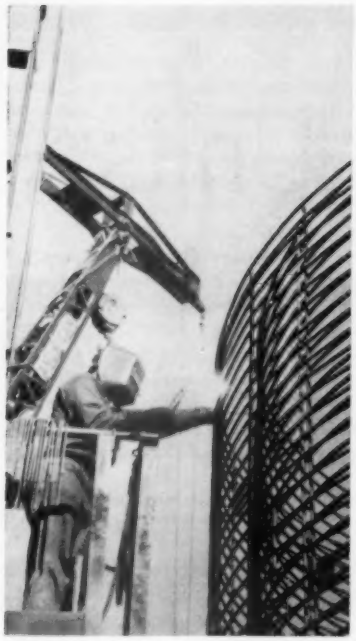
Design and materials are the subjects of the February 3 and 4 sessions. The producers will take over on February 5; advanced design lectures will be given on February 6, and the final day will be devoted to papers on technical subjects. Information on registration procedure is available from Dr. A. M. Ozell, professor of Civil Engineering, University of Florida, Gainesville, Florida.

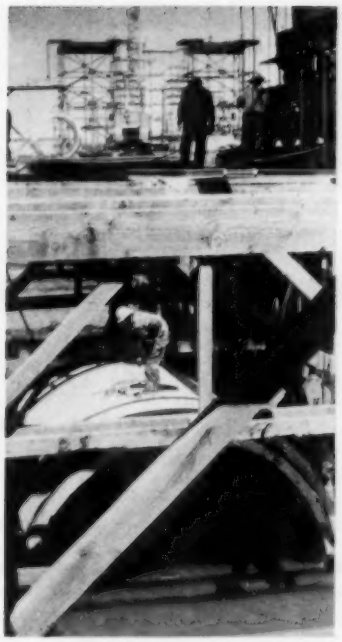
■

New York Concrete Group Sets Up Scholarship Fund

The New York State Concrete Masonry Association recently presented a check for $1,000 to the New York State Association of Architects to be used for scholarships for worthy architectural students in the six accredited schools of architecture in

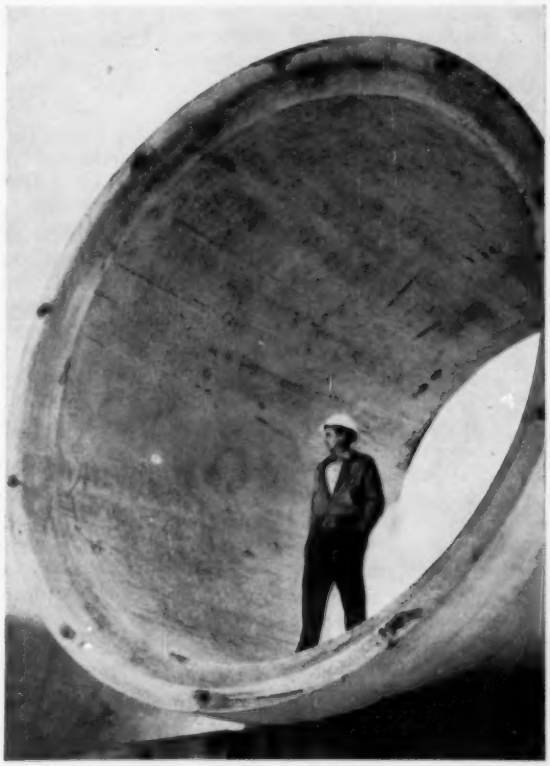
the state. William C. Homer (right), president of the New York State Concrete Masonry Association, turned over the check to Trevor W. Rogers, retiring president of the New York State Association of Architects.





Lightweight Concrete Pipe

Two-thirds of a mile of pipeline was cast and laid for Southern California Edison Company's new steam generating plant at Huntington Beach, California.



● Upper Left: A welder puts the finishing touches on the reinforcing steel cage of a section of lightweight concrete pipe. Casting was done by the American Pipe and Construction Company, Los Angeles, California, using Rocklite, a lightweight coated expanded shale aggregate.

● Upper Middle: A crane positions the fifty-ton sections and molds in American Pipe's yard. When a unit is in the water, its weight drops to less than 27 tons.

● Upper Right: Special hoists lower the pipe sections into position five to eight feet beneath the ocean floor. Laying operations were scheduled over a nine-month period.

● Lower Right: Each unit has an inside diameter of 14 feet, which dwarfs the height of a man. A total of 320 sections were used to complete the pipeline, which extends 1800 feet in two parallel lines.

Curing Concrete Units

By **WILLIAM GRANT**
Consulting Engineer

Conclusion of a Two-Part Article

• **HIGH TEMPERATURE STEAM CURING** — In high temperature steam curing, saturated steam is used to produce an equilibrium temperature ranging from 140 to approximately 170 degrees Fahrenheit. It is not enough for a block manufacturer to use live steam curing; he must know how the live steam affects the masonry units. Frequently, it is assumed that all that is necessary is to turn live steam into the kiln and continue to inject steam till it is time to empty the kiln. Only then is the steam turned off.

Careful study of live steam curing indicates that excellent results can be obtained economically if the products manufacturer understands what is happening in the kiln.

Many plant operators have arbitrarily assumed a steaming time of a predetermined period for their plants without giving due consideration to the fact that from day to day conditions may vary over a considerable range depending on the season of the year.

For instance, a steaming time of two hours will in one case raise the temperature of the kiln to 160 degrees Fahrenheit while in another instance in the same length of time the kiln temperature may reach 190 degrees Fahrenheit. With such conditions, a cement giving satisfactory curing results at the lower temperature may be adversely affected at the higher temperature.

Such varying conditions of curing may, in a measure, be responsible for the differences in compressive strengths obtained under what may seem to be uniform plant practice.

An important factor is the variation in the characteristics of different brands of cement. This is because the raw materials used by the cement companies vary in chemical and physical makeup of the constituents entering into cement manufacture. These variables determine rates of cement setting and hardening.

This point is frequently forgotten by the producer who, through necessity, must use several brands of cement in his operations. Therefore, for best results, the producer should study the peculiarities of each brand of cement and evolve the most suitable type of curing technique.

In many instances the manufacturer is remiss in not equipping his plant with the proper types of instruments for measurement of temperature within the kiln during the curing cycle. This may be corrected by purchasing some form of visual or audible indicating or recording temperature device.

Good curing practice requires that the temperature rise should approximate not more than 60 degrees Fahrenheit per hour. This fact is substantiated by experimental work done in England, by A. G. A. Saul.* A conclusion was that an excessively rapid rate of initial temperature rise is detrimental to the strength of the units cured by steam at atmospheric pressure.

Plant experiment shows that too fast a temperature rise may result in crazing or cracks appearing on the face of the units. This condition is caused by expansion due to the differential of temperature between the surface and the interior of the block.

Too slow a temperature rise can result in surface curing while the proper curing reaction has not been fully developed inside the block.

Steam boiler — The selection of the boiler for a live steam curing system is of prime importance. The size of the boiler is dependent upon the load requirements of the kilns, the number of kilns to be steamed simultaneously, and the plant load other than steam needed for curing.

The boiler capacity should be sufficient to bring the block up to maximum temperature in approximately the time required to load the kiln. A boiler in excess of plant requirements is advisable since boiler efficiency is improved when it is not operated at maximum load. Besides, the extra available steam may be used to advantage for other purposes throughout the plant. The cost of excess boiler capacity per horsepower is but a fraction of what an additional boiler would cost.

The larger the water capacity and heating surface of the boiler, the less will be the concentration of the scale forming elements and the thinner the scale deposit for a given period of time. Also, the heat transmission loss through the tubes will be less.

Practically all of the boiler feed water is used to develop live steam, and this water enters the boiler at an average temperature of 50 degrees Fahrenheit. The amount of boiler makeup water may vary over a range from 300 to 900 gallons per hour.

As a precautionary measure when determining the size of the water

*_Principles Underlying the Steam Curing of Concrete at Atmospheric Pressure — by A.G.A. Saul, Magazine of Concrete Research (England) March 1951._

main necessary to feed the boiler, it is well to consider other water requirements for the plant, and then to install adequate sized mains for all purposes. Future expense and delay may be avoided if the hourly requirements of water, whether drawn from a central source or from a well, are accurately established.

Steam — Matter exists in one of three forms: as a solid, liquid, or gas. Water under average conditions exists in liquid form.

The amount of heat necessary to raise the temperature of the water is expressed in British Thermal Units (B.T.U.) where a B.T.U. is the quantity of heat required to raise the temperature of 1 pound of water 1 degree Fahrenheit (60 to 61 degrees Fahrenheit.)

The amount of heat necessary to raise the temperature of 1 pound of water from 32 degrees Fahrenheit (freezing point) to 212 degrees Fahrenheit (boiling point) is 180.1 B.T.U. This quantity of heat is called sensible heat. In order to change the liquid into a vapor at atmospheric pressure (14.7 pounds per square inch absolute), 970.4 B.T.U. must be added to each pound of water after the temperature of 212 degrees Fahrenheit is reached. During this transition period the temperature remains constant. The added quantity of heat is called the latent heat of evaporation. Consequently, the total heat of the vapor formed when water boils at atmospheric pressure, is the sum of the two quantities 180.1 and 970.4 or 1150.5 B.T.U. per pound.

When water is heated in a closed vessel, not completely filled, the pressure will rise after the steam begins to form accompanied by an increase in temperature.

Saturated steam — Saturated steam is steam in contact with liquid water at a temperature which is the boiling point of water and the condensing point of the steam. It may be either dry or wet, depending upon the generating conditions.

1. Dry saturated steam is steam which is free from mechanically mixed water particles. Saturated steam at any pressure has a definite temperature.

2. Wet saturated steam, on the other hand, contains water particles in suspension.

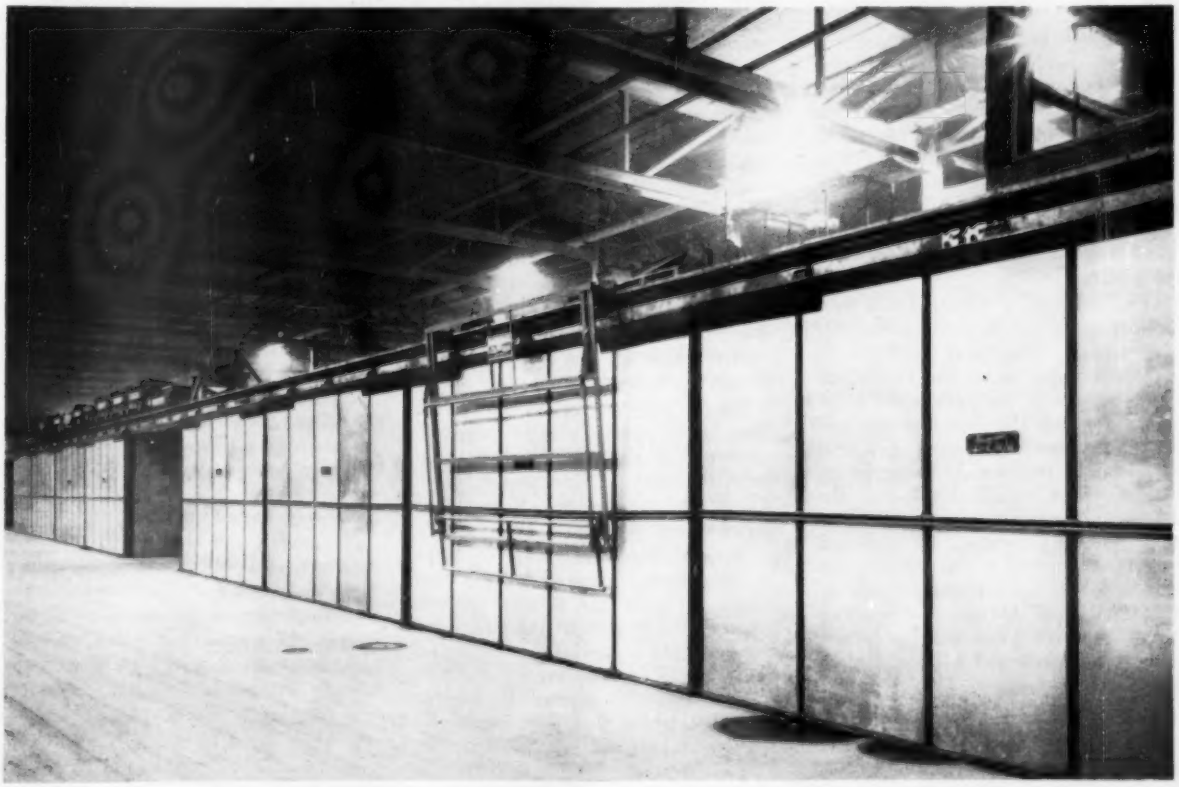
Superheated steam — Superheated steam is steam at any given pressure which is heated to a temperature higher than the temperature of saturated steam at that pressure. Water cannot exist in the presence of superheated steam.

Capacity of boiler — From calculations made of plants using heavy as well as lightweight aggregates and having different kiln sizes and constructions, an average value of 15 B.T.U.'s per block has been arrived at as the factor to determine the horsepower requirements for curing. This value, coupled with the desired temperature rise per hour, is used in the following formula.

Multiply the factor 15 by the number of kilns to be cured simultaneously, then by the number of racks per kiln and the number of block per rack. This product should be multiplied by the number of degrees of temperature rise desired per hour to bring the kiln up to optimum steam temperature. Divide this end product by the number of B.T.U.'s per boiler horsepower. Then divide the result by 0.86, which is the factor to be used to determine horsepower when the temperature of the water entering the boiler is 50 degrees Fahrenheit.

The B.T.U factor (15) was determined after considering many variables among which are: (1) rack and pallet weight per kiln; (2) total weight of units, including water content; (3) kiln surface heated; (4)

● Typical kiln installation at Canada Concrete Products, Inc., Montreal.



air volume in loaded kiln; (5) radiation loss, and (6) heat of hydration of cement.

Heat Requirements — A block manufacturer has kilns with a capacity of 1,440 eight-inch units per kiln and desires to steam three kilns simultaneously.

The heat required in B.T.U.'s for curing is 15 × 3 × 1,440 × 60 (degrees temperature rise per hour) = 3,880,000 B.T.U.

One boiler horsepower is defined as the heat required to evaporate 34.5 pounds of water from and at 212 degrees Fahrenheit (atmospheric pressure). It equals 33,478 B.T.U.'s If the makeup water was at 212 degrees Fahrenheit, the heat required would be a certain amount (latent heat of evaporation). Additional heat is required to raise the water from 50 degrees Fahrenheit to 212 degrees Fahrenheit (assuming makeup water at a temperature of 50 degrees Fahrenheit).

Latent heat of evaporation (heat required to evaporate 1 pound of water from and at 212 degrees Fahrenheit at atmospheric pressure) equals 970.4 B.T.U.'s. Heat required to raise 1 pound of water from 50 degrees Fahrenheit to 212 degrees Fahrenheit equals 162.0 B.T.U.'s. The total heat required to change 1 pound of water from 50 degrees Fahrenheit to steam at 212 degrees Fahrenheit is the sum of these two (970.4 plus 162.0) or 1,132.4 B.T.U.'s.

The factor to use in determining horsepower when using 50 degrees Fahrenheit entering water, instead of water at 212 degrees Fahrenheit, is found by dividing the latent heat of evaporation (970.4 B.T.U.'s) by 1,132.4. This is 0.857. For practical purposes this factor is considered to be 0.86.

The horsepower required will then be a fraction in which the numerator will be the total heat required to cure the units under the conditions given above (3,880,000 B.T.U.'s) and in which the denominator will be the product of the amount of heat required to produce 1 boiler horsepower (33,478 B.T.U.'s) and the factor used when 50 degrees Fahrenheit entering water is assumed (0.86). Expressed as the fraction this is 3,880,000/33,478x0.86 = 135, or the number of horsepower required to steam three kilns simultaneously, each kiln holding 1,440 equivalent 8x8x16 inch units.

Under average conditions the above formula can be simplified by combining the figures which usually do not vary, as follows:

$$\frac{15 \times 60}{33{,}478 \times 0.86} = \frac{900}{28{,}791} = 0.03125$$

The boiler horsepower requirements will therefore equal the number of block to be cured simultaneously multiplied by the factor 0.03125.

For example:

3 kilns each with a capacity of 1,440 block = 4,320 block then 4,320 times 0.03125 = 135 horsepower required.

An approximate method for determining the horsepower requirements of a boiler for curing purposes, is to figure one horsepower for each thirty, eight-inch or equivalent units being cured simultaneously, exclusive of heating, warming water or steaming aggregate.

NET HORSEPOWER LOAD REQUIREMENTS OF BOILER

Kiln Capacity 8-in. Units	H.P. Required for 1 Kiln	H.P. Required for 2 Kilns Simultaneously	H.P. Required for 3 Kilns Simultaneously
864	30	60	90
1080	35	70	105
1200	40	80	120
1440	45	90	135
1728	55	110	165
2160	70	140	210

Steam application — There is a great difference of opinion among operators on the best method of introducing steam to the kiln. Some advocate introducing the steam at the ceiling at one end of the kiln, others, for introducing it at the floor level, while still another group contend that the best method is to introduce it through orifices in continuous pipes running the length of the kiln and situated slightly above the floor level.

Being heavier than air, steam, when it is introduced from a single large pipe at the ceiling level, will tend to settle on the units as it descends to the floor.

Steam injected at or near the floor level through a series of small orifices has a high moisture condensation factor. This condensation reduces the moisture which should be deposited on the units.

Steam distribution — In order to cure block successfully, it is necessary to know the proper volume, velocity and quality of the steam being delivered to the kiln. The volume of the steam must be known in order to obtain the recommended temperature rise, which shouldn't exceed 60 degrees Fahrenheit per hour in the kiln.

The velocity of the steam must be such that it will result in the desired action — turbulance — to mix thoroughly the air in the kiln in order to distribute heat and moisture uniformly.

Different degrees of heat and moisture throughout the kiln will result in different degrees of curing between units situated in front and back, as well as top and bottom of the kiln.

Turbulance within the kiln is obtained from the proper pressure at the terminal of the steam nozzle. This pressure must not be confused with boiler pressure since there is a pressure drop along the steam line between the boiler and the kiln.

This drop in pressure depends on the length of pipe connecting the boiler and kiln, number of fittings in the steam line, diameter of steam line, and the pounds of steam being used.

A good practical assumption, determined from experience follows:

The velocity of the steam injected should vary from 750 to 1,000 feet per minute per linear foot of kiln.

Quality of steam — The quality of the steam must be such that no entrained water is carried along with it when leaving the nozzle. This is to prevent over-wetting the block, and to eliminate the possibility of washing the surface of the block. The importance of keeping the steam in as dry and saturated a condition as possible is demonstrated by the fact that steam carrying 1 per cent of moisture at the nozzle will still be slightly superheated and will therefore contain no entrained water, whereas the addition of another 1 per cent (2 per cent total) will result in steam that entrains 43 pounds of water. Steam that carries 5 percent moisture at the nozzle will entrain 153 pounds of water. (These calculations are based on a 2 inch nozzle, 10 pounds per square inch gage pressure at the nozzle, and a discharge of 4,300 pounds of steam per hour.)

Effect of velocity of steam — The velocity of the steam entering the kiln may be a deciding factor on the uniformity of the results obtained. If the velocity is too great, the steam will impinge directly on the backwall of the kiln, inducing condensation of the water vapor. Such a condition would release part of the total heat available into sensible heat, thus raising the dry bulb temperature of the air in the kiln and reducing the absolute humidity and vapor pressure of the air in the kiln.

When too low a steam velocity is used, the temperature gradient of the air in the kiln will vary considerably from top to bottom and from front to rear.

The distribution and velocity of the steam is dependent on the physical dimensions and the internal load of the kiln; the velocities for various shapes of kilns range from 10,000 to 60,000 feet and upwards per minute.

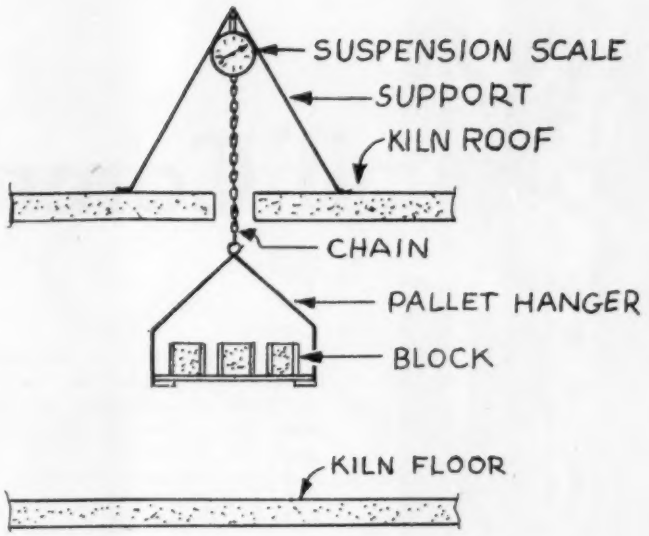
Since there is a limit to the velocity of the steam supplied to the kiln, the dimensions are of primary importance. Too long a kiln will not permit uniform distribution of the steam throughout the entire length unless special piping arrangements are made, such as steam injected in both directions, the back and front of the kiln, from a central point in the roof. A good practical length for a kiln is 55 feet.

Entrained water, in the form of solid particles carried along with the steam, and traveling at a velocity in excess of 60,000 feet per minute, can do considerable damage to the units being cured. It is essential that pipe lines and insulation be designed and installed so that the steam leaves the nozzle in a dry saturated, or slightly superheated condition.

Steam at a higher nozzle pressure than that which exists in the kiln may produce, when entering the kiln, a temporary condition of sudden expansion of the saturated vapor, in which the steam continues to expand in a superheated condition, without any condensation taking place.

Superheated steam of this nature is not stable and dissipates through condensation of part of the vapor. The temperature of the mass in the kiln is raised by the latent heat given off during the condensation, until the thermal equilibrium is restored. This condensation takes place throughout the kiln because of the velocity of the steam employed. Moisture is therefore deposited on all units present in the kiln.

The solution of these steam problems can best be undertaken by a processing engineer who is well versed in the thermodynamic properties of steam and air. Steam requirements should be determined only after thorough consideration of the proposed plant layout.



● Device for determining equilibrium temperature.

Steam leaks — Few operators give sufficient attention to effects of steam leaks in their boiler plant and attendant piping. Leaks if not promptly located and sealed can amount to quite a sizeable loss of fuel over a period of time.

Suppose a boiler operating at 15 pounds pressure has an accumulated steam leakage area of 0.10 square inches. This same unit, operating for 4,000 hours over a 12-month period, would have an approximate loss of 30 tons of coal or 5,400 gallons of fuel oil. With a pressure of 125 pounds and a similar leakage area, the approximate loss can reach 140 tons of coal or 25,500 gallons fuel oil. With an area of 0.50 square inch the loss can amount to five times that from an area of 0.10 square inch.

Thermodynamics of curing — High temperature curing in the past has been considered more from a heating and humidity standpoint than a processing problem.

As the dry bulb temperature increases, the greater will be the number of grains of moisture required per pound of dry air to maintain a condition of 100 per cent relative humidity.

Table shows the relative amounts of moisture required to maintain 100 per cent relative humidity, for various degrees of temperature.

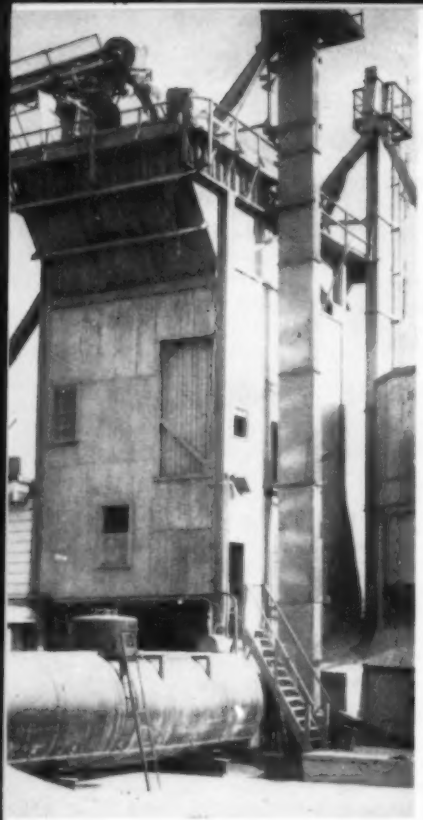
Relative Humidity — In steam curing block it is important to maintain as high a moisture content (relative humidity) as possible in the kiln atmosphere. As the temperature in the kiln rises, the air in the kiln is rendered capable of holding more moisture, hence more evaporated water (steam) must be introduced to bring the kiln atmosphere to a saturated condition (100 per cent relative humidity).

(*Continued on page 36*)

THERMODYNAMIC PROPERTIES OF DRY AIR*

Column A Temperature Degrees F.	Column B Lb. Moisture per Lb. Dry Air	Column C Vapor Pressure P.S.I.
80	0.022	0.51
100	0.043	0.95
120	0.081	1.69
140	0.153	2.89
160	0.299	4.74
170	0.433	5.99
180	0.658	7.51
200	2.295	11.53

*American Society of Heating & Ventilating Engineers "Guide"



● Batching plant of O'Laughlin Ready Mix Concrete Company, Evanston, Illinois.

Communication:

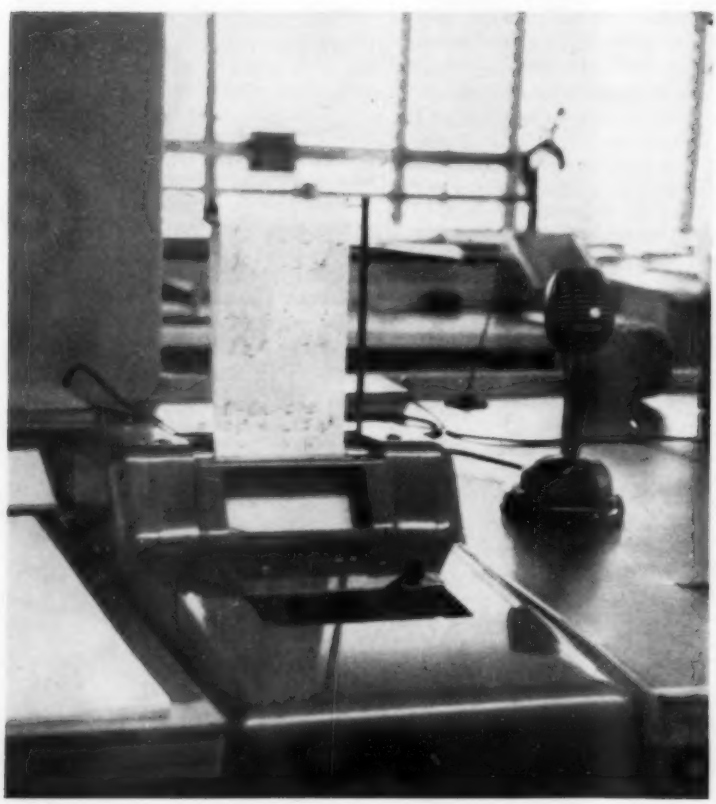
Despite the fact that their plant is equipped with many of the latest automatic and electronic devices to speed up the flow of materials, the yard at O'Laughlin Ready Mix Concrete Company, Evanston, Illinois, is a pretty busy place around 6:30 in the morning.

Controlling the movements of 32 ready mixed trucks, all clustered about in one yard and all waiting to be filled with concrete at the same time, is difficult in any case — and each minute's extra delay is very costly.

But it's at times such as this — early morning jam-ups — that O'Laughlin's automatic equipment and well regulated communications system prove most effective in setting the trucks on their way.

On a typical morning, the trucks, which had been packed like sardines in the large heated garage the previous night, are driven out into the clean-swept yard. There they wait in a sort of line, truck engines pointed toward the runway under the batching plant.

A number cracks over the loudspeaker in the yard, which is otherwise reasonably silent except for the talk of the drivers, the hum of the engines and the revolving mixers.



● Automatic duplicating device and two-way radio are handy in dispatcher's office.

Greater Plant Efficiency

"83." This number conveys it message: truck number 83 you're up next.

Initially, the dispatcher in the front office on Main Street had determined from his work sheet where truck number 83 was going with its first load, and what the particular job required in the way of concrete.

This information was then relayed to the control room of the batching plant by an automatic duplicating device. In the control room, the information showed up as just a set of numbers, "83-7-6-5." Truck number 83 is to be loaded with 7 cubic yards of concrete composed of number 6 gravel and 5 bags of cement.

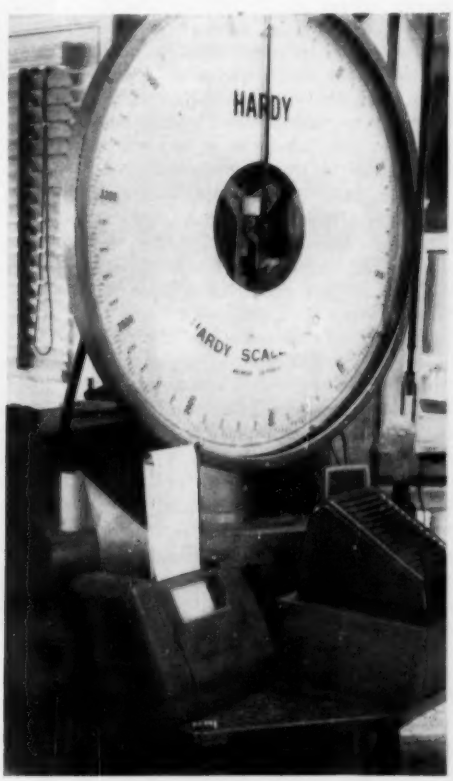
Even before 83 pulls into the stall, the mix is being set up on the control panel between two large scales. One scale shows the quantity of sand and gravel going into a hopper above the truck mixer, and another shows the pounds of cement being separated for this particular load. A separate meter is punched with the exact number of gallons of water required for this particular mix.

As the driver pulls his truck under the tower, the attendant in the control room, which is almost on eye level with the truck's cab, helps with the loud-speaker to guide the driver so the truck is in position for charging.

While the truck mixer is being charged, the driver with a separate hose has a chance to fill the truck's water tank and clean off any dirt and grime that may have collected.

Once out on the road to the job site, O'Laughlin trucks are in constant contact with the dispatcher by two-way radio. Here again, it's still primarily a communication using numbers so as not to confuse two drivers with the same first names. And numbers are easier to understand over the radio than most

● Dispatcher's instruction on specific concrete mixture are recorded on the control room duplicator. Beside it is the intercom.



● Early A.M.—trucks are still lined up in the heated garage.

words. "49, leaving." When this comes through to the office, the dispatcher knows where the truck is and approximately how long it will be before the truck is back at the plant for another load. To take it out of this impersonal number system, the dispatcher frequently, after indicating his recognition of the message, calls the driver by name, "O.K., Joe."

When the day is finished for any one of the trucks, the dispatcher sends a note over the duplicator to the batch plant, "22, wash out." This information is then relayed to truck 22's driver over the loud-speaker.

Out back of the garage is the wash-out tank. A driver, after filling his truck with water, simply backs his truck to the edge of the first compartment of the tank and discharges the residue left in the mixer. O'Laughlin's wash-out tank is built as if it were three shallow swimming pools placed side-by-side. Outlets in between each of the compartments allow the overflow from one to travel to the next in line.

Because of the circulation and agitation developed in the first compartment when a truck mixer discharges, only the larger and heavier particles settle to the bottom. The overflow into the second compartment takes with it some of the sand and cement. Again some more of the residue settles to the bottom, and a small portion of it is carried over into the third compartment. By now, the water has lost most of its movement, and the fine particles, which were carried over, settle to the bottom. A drain takes the excess water out of the third compartment.

O'Laughlin Ready Mix Concrete Company, like many others in the business, has progressed with the times. The organization started out in 1948 as just a bud of a business. Since then, it has grown into a sprawling establishment on the west side of Evanston, just north of Chicago. Recently, the company, to move with the times, built new plants in Mundelein, Illinois, and Beloit, Wisconsin.

With the movements of many families into the northern and northwestern suburbs of Chicago, these two plants, and particularly the one in Mundelein, bring O'Laughlin's service closer to the areas of prominent expansion. Also, with the increase in highway construction going on in this part of Illinois and lower Wisconsin, the two new O'Laughlin plants put the company in a good competitive position for the jobs that are being let.

● After checking weights on the roll file (left), attendant simply turns dials of the control panel to obtain correct amounts of cement and aggregate.

● The attendant in the control room is at eye-level with the cab of trucks positioned for charging.

● After discharging mixer residue at the wash-out tanks at the end of the day, a truck heads for the garage.

what's the

Modified British Shrinkage Test

Possibly, as a block producer, you already have run into mention of the modified British test method for predicting ultimate shrinkage of block. If not, the chances are you will be hearing of this method more and more frequently in the future.

Block shrinkage has been in the past, and is still, one of the imponderables—the unanswered questions—for the block producer, the architect who is designing a block wall; the various government, state, and local agencies writing specifications and codes, as well as the contractor and builder who is buying block for use in his structures.

Cracks, developing in masonry walls from block shrinkage, still plague the industry. And though certain factors are known to contribute to shrinkage—among them, temperature, moisture, and carbonation—the exact quantitative amount and remedy are not known.

The question of how much a block (or a block wall) will shrink, even though the block has been cured to ASTM standards, is still asked.

Of course, the ideal method of determining ultimate shrinkage is to test the block under the identical conditions of the exposure to which it will be subjected. But such a method presents some very obvious disadvantages, among them time, cost, and the problem of supplying continuously dry warm air to one side of the block while the other is being soaked, or frozen, or burned by the sun.

So, over the years, a number of tests have been developed in an attempt to predetermine the approximate shrinkage that will take place in the block under average conditions.

A reference standard was set up which, though it didn't measure shrinkage over a period of years, was felt would give very close correlation to actual shrinkage results under average conditions of exposure.

A cured block is first saturated; and then its exact measurements are taken. Next, the block is subjected to controlled drying at a temperature of 70 degrees Fahrenheit and either 10 or 50 per cent relative humidity. This drying is continued until the block reaches equilibrium (usually, a period of from 4 to 8 weeks). Then the block is measured a second time, the difference between the readings is the block's shrinkage under the reference test method.

The next step in the problem was to find a shorter test method that would give shrinkage results that approximated the reference standard results.

The ways of accelerating shrinkage are to: (1) raise the temperature; (2) use a smaller sample of concrete—a portion of the block; or (3) use a combination of the first two methods of acceleration.

Committee 716 of the ACI, after conducting tests, recommended in 1953 a rapid method of testing for shrinkage that specified that the block be subjected to electric oven temperature of between 220 and 235 degrees Fahrenheit for 48 hours. Their tests showed the resultant shrinkage was very close to double that obtained with the reference test method.

ACI's rapid method as adopted by the Corps of Engineers was taken from NBS-3079, dated January 30, 1954.

Results of continuing field comparison of shrinkage measurements of a variety of block subjected to the reference and rapid test methods showed somewhat eratic figures. It was believed that some of the block didn't reach equilibrium after only 48 hours of drying under the rapid test method.

In the meantime, the British were using another accelerated method to determine block shrinkage. They were subjecting sections of block to a temperature of 120 degrees Fahrenheit and a relative humidity of 17 per cent until the concrete prisms reached equilibrium. This took from one to two weeks.

At the same time, along with a number of others, the National Concrete Masonry Association was conducting its own experiments on block shrinkage. To make the tests as all inclusive as possible, five aggregates were used in the block samples—sand and gravel, cinders, pumice, shale, and slag. Then one half of each sample was autoclave cured and the other half was cured with low-pressure steam. Finally, some of each sample were tested for shrinkage by four different methods—the reference test, ACI's rapid test, the British test using prisms, and a modification of the British test that used whole block.

The results of these tests gave a close correlation of shrinkage between the whole block samples dried by the reference method and the modified British method.

The modified British test—whole block subjected to 120 degrees Fahrenheit and 17 per cent relative humidity until equilibrium is reached (usually one to two weeks)—was adopted as a shrinkage test in April 15, 1957, by the Corps of Engineers as Interim Guide Specification for Masonry, CE-206.01.

Truck Drivers: Winterize Your Driving

by KEN DOUGHERTY

Very shortly, many activities in the concrete products and ready mixed concrete industries will be curtailed in winter-affected parts of the country. But there will still be plenty going on, including a lot of truck driving. Winter brings additional hazards to all drivers. A review of driving hazards and safe driving principles is valuable (particularly for winter driving) for anyone, even professional truck drivers.

What Are The Hazards

In 1956, motor vehicle on-the-job accidents claimed 3,000 lives and injured 100,000 persons. About 17 per cent of these fatal accidents occurred under conditions of rain, fog, or snow.

• **Reduced Visibility.** As the hours of darkness increase, so do motor vehicle deaths. Added to the hazard of darkness, as such, is the factor of fogged and ice-coated windshields. The collecting of snow, ice, and road film on headlights and taillights is a vision-reducing element that is often overlooked, especially during extended trips. Snow banks and stalled vehicles along the sides of the road also restrict visibility around curves and at intersections. Signs and road markers normally provided to aid the motorist are often coated with snow and ice, and the driver therefore must be doubly alert for curves, hills, and other hazards ahead. Also, snow drifts widen the road and obscure shoulders and curbs. Not to be overlooked is the malfunctioning of windshield wipers and defrosters. Breakdown in this equipment is usually not noticed until the occasion arises for its use.

• **Poor Traction.** A wet, muddy, snowy, or icy road is considered a contributing factor in about one out of five motor vehicle accidents. The worst possible condition, of course, is glare ice. No matter how modern, powerful, and well-engineered your truck, its performance is limited by the condition of the road.

• **Temperature Variations.** This is a major factor in winter driving that is often overlooked. As the temperature rises to near the point where it will begin to melt snow and ice, traction decreases, and braking distance increases. This can be particularly treacherous when the truck driver starts out in the cold morning and continues to drive into mid-day when the temperature rises. During this time the road may become increasingly slippery. The National Safety Council reports that tests have proven that at 20 miles per hour a tractor single axle semi-trailer travelling on ice and with a gross load of 42,600 pounds requires 193 feet to stop when the temperature is at 5 degrees Fahrenheit. The same truck would take 267 feet to stop as the temperature rose to 29 degrees Fahrenheit.

What Are The Rules

The committee on winter driving hazards has developed, over a period of years and as a result of extensive testing and research, a set of seven basic winter-driving rules for truck drivers. Following these rules will greatly reduce your chances of coming to grief through an accident on the road during the period of your winter operations.

1. Accept Your Responsibility to do all in your power to drive without accident. Don't blame the weatherman for an accident. Be prepared to meet the situation.

2. Get the Feel of the Road. Try brakes occasionally while driving slowly and free of heavy traffic. Find out just how slippery the road is and adjust your speed to road and weather conditions. Expert drivers don't skid.

3. Keep the Windshield Clear inside and outside. Be sure headlights, windshield wipers, and defrosters are in top working condition. You have to see danger to avoid it.

4. Use Tire Chains and Good Tires when roads are covered with snow and ice. Get the best chains possible. They cut stopping distance in half and give four to seven times more traction for starting and climbing. But even with the help of chains, slower than normal speeds are a "must" on snow and ice.

5. Use Sanders. They improve slow speed traction on ice and help to get started when stopped on a slippery spot. Sanders can serve where it would be a needless expense and waste of time to put on tire chains.

6. "Fan or Feather" Brakes to slow down or stop. Be particularly careful when the truck is lightly loaded or empty. It's easy to lock the wheels and throw the truck into a dangerous skid or jackknife. Remember, the key to control of any vehicle is to avoid locking or spinning the wheels.

7. Follow at a Safe Distance. It's hard to explain how the fellow ahead was able to stop but you couldn't. Give yourself room to stop. Remember, without tire chains it takes three to twelve times as far to stop on snow and ice as on dry concrete.

Aside from the loss of life, accidents cost money. A driver laid up with injuries for an extended period loses wages and costs his company money. Even minor, non-injury accidents, such as those caused by skidding off the road into a ditch can result in the company's not filling its orders and other commitments on time and thus making the customers unhappy. This can only help the competition. These are only some of the costs of accidents. Can you afford them?

● Prepare for any weather.

● Fan brakes to a stop.

● Keep the windshield clear.

● "Safe driving, fellas!"

Plant Modernization Increases

By B. B. Ritchey

What improves the quantity and quality of a block plant's production? In the case of the J. R. Asbell Block Company, Panama City, Florida, it was the installation of new kilns, each of which was equipped with a thermometer recorder-controller to regulate and maintain inside temperature. This modernization improved their block's compressive strength, allowed a reduction in the company's labor force, cut the percentage of culls to a maximum of ½ per cent of production, raised curing temperatures from 125 degrees Fahrenheit to a constant 180 degrees Fahrenheit, and cut steaming time from 5 hours to a maximum of 3 hours.

Prior to this modernization program, the Asbell Company cured its block in a kiln that had a loose canvas flap for a door. Both steam and heating coils were used to bring the old kiln's interior up to curing temperature.

No controls of any kind were used. The kiln steam valve was opened; the heating coils were turned on; and both heating processes continued until the block were cured. This way, a maximum temperature of 125 degrees Fahrenheit could be obtained in a kiln, and approximately 5 hours of continuous steaming were needed to cure the block. Operating at full capacity, they previously produced about 14,000 block in two 9-hour shifts. And a large percentage of these were rejected as culls. At that time the plant employed 8 men per shift for the manufacture of block.

In 1956, the company decided to expand its operation. A second block machine was added and 18 new kilns with full-sealing doors at one end were built to replace the former operation. Each kiln was equipped at the rear with a 0-200 degree Fahrenheit, filled system recording thermometer with a 10 per cent proportional band pneumatic control unit. A steam supply line runs the full length of each bank of 9 kilns, and an automatic control valve precedes each kiln's individual tap-off that leads from the steam supply line. Also, a hand operated valve was inserted at each tap-off, ahead of the control valve so that steam could be turned off when the kiln was not in use. The sensing bulb of each thermometer was mounted about half way up the side and in the center of the kiln wall so as to get an accurate, representative reading of the interior temperature.

By using this type of instrument and control, the Asbell Company is able to get more precise control action than would be available with other methods. Also, they have an accurate record of kiln conditions for every load of block. This record can be filed and consulted at any time for cost accounting or quality control information.

After the temperature is selected at which the kiln is to be held, and the instrument is turned on, the 10 per cent proportional band controller takes over. The controller does not produce an on-off cycle, such as a household thermostat: on, when the temperature goes below the set point, and off, when it reaches the set point or goes above it. A thermostat would open or close control valve completely. Instead, the controller is sensitive over an area equal to five per cent of the scale on both sides of the set temperature. Thus, the valve partially opens or closes, depending upon how close kiln heat is to the set temperature. This way, the valve admits only the steam needed to hold the set temperature exactly without allowing kiln heat to drop below or go above that point. This control continues indefinitely until the instrument is turned off.

So, when a kiln is placed in operation, a new chart is placed on the thermometer; the desired temperature is set; and the hand shut-off valve controlling steam delivery is opened. At the end of the curing cycle, the hand valve is turned off, and the kiln door is opened.

The first noticeable improvement in the company's operation was a tremendous cut in steam consumption and curing time. Before putting the new kilns in operation, they had to allow steam to flow constantly into a kiln for as long as five hours. Since the thermometer-controller of the new system allows only enough steam to enter the kiln to maintain desired temperature, the company cures block in three hours, thus giving the company a double saving — approximately 40 per cent less steam and 40 per cent less time.

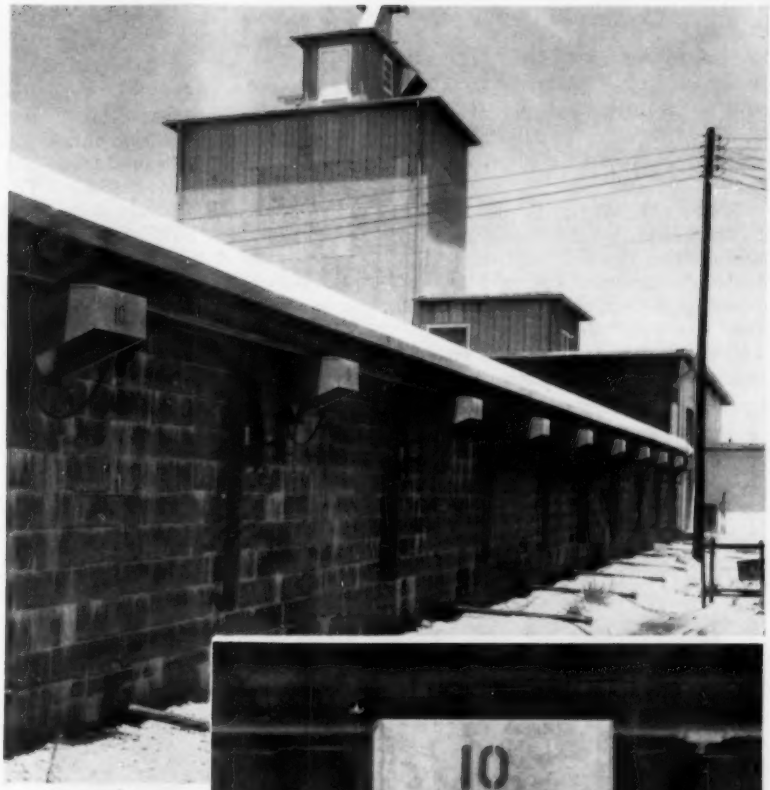
Another saving that was almost immediately obvious was a tremendous drop in the number of culls per day — even though the company had more than doubled its capacity. Under the new operation, they are getting only about ½ per cent culls though production increased to 28,500 block per day.

Also, they found that previously it took eight men per shift for a one block machine operation. When they added a second machine and new kilns, they only needed three men per shift — a considerable saving in manpower.

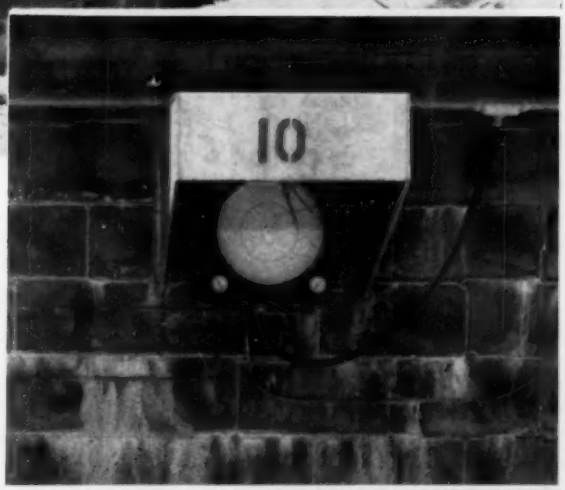
The final confirmation of the value of their new system came from an outside source. The Asbell Company submitted a random sample of its product to a customer for testing in connection with a construction bid; and, on the reports of the tests, Asbell was given the contract.

Today, with closed kilns and temperature recorder-controllers, the company is making more and better concrete block — brought about by a relatively simple plant modernization program.

s Economy



● Recording thermometers line the back wall of the bank of kilns. Each thermometer is preset to control heat and steam in a kiln.



● Each device records kiln's interior conditions on graphic charts. These can be permanently filed for reference.

● Green block going into the kiln are cured in three hours steaming time, 40 per cent less time than was required before new kilns with recording thermometers were installed.

Curing Concrete Units

(*Continued from page 27*)

Relative humidity is defined as "the ratio of the quantity of vapor actually present to the greatest amount possible at the given temperature."

Relative humidity is determined by the use of two thermometers. One thermometer known as the "dry bulb" thermometer has its bulb exposed to the air, the other known as the "wet bulb" thermometer has its bulb covered with wicking or muslin, the end of which is immersed in a suitable container of distilled water.

Through capillary attraction of the wick, the bulb is kept constantly moist and as the water evaporates the bulb is cooled. The drier the air, the faster the water evaporates, accompanied by a lowering of the "wet bulb" thermometer reading. The difference in the readings of the "dry bulb" and "wet bulb" thermometers is a measure of the relative humidity and this can be determined from tables prepared for this purpose. When the air is saturated (100 per cent relative humidity) both thermometers will read the same.

More and more, people with discriminating taste and a knowledge of construction values are using exposed Waylite Masonry. It is remarkable for beauty . . . economy . . . thermal and acoustical properties. Complete data in Sweet's or, write Waylite Co., 20 N. Wacker Drive, Chicago, or Box 30, Bethlehem, Pa.

WAYLITE Masonry Units

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This advertisement appeared in an issue of a major architectural journal which was researched as to readership of advertisements by a leading organization. Of all the advertisements—regardless of type of product—this advertisement was rated by the architects as being 6.4 times more effective than the average advertisement.

Waylite is made in the most modern type of aggregate plant where all processing factors are under rigid quality control. The aggregate is made into lightweight units by leading products manufacturers. . . . Thus, Waylite masonry units are of exceptionally high merit. They are known widely and favorably in the building industry. . . . The Waylite Co., 20 North Wacker Drive, Chicago; or P. O. Box 30, Bethlehem, Pa.

Instruments for determining relative humidity are known as hygrometers.

I. With a dry bulb temperature of 120 degrees Fahrenheit and a wet bulb temperature of 120 degrees Fahrenheit, the result would be 100 per cent relative humidity. This atmospheric condition would require 567 grains or 0.081 pound moisture per pound of dry air.

II. If the dry bulb temperature is raised to 180 degrees Fahrenheit, without any increase in grains of moisture per pound of dry air, the wet bulb thermometer will indicate a temperature of 135.5 degrees Fahrenheit, or a resultant relative humidity of 29.7 per cent. In order to obtain 100 per cent relative humidity at 180 degrees the atmospheric moisture content would have to be adjusted to 4,604 grains or 0.658 pounds moisture per pound of dry air.

III. If the curing temperature were elevated so that the dry-bulb temperature of 200 degrees Fahrenheit, while the moisture content remained at 0.081 pounds per pound of dry air, the resultant relative humidity would be reduced to 19.3 per cent. In order to obtain 100 per cent relative humidity in this case, the atmosphere would require a content of 16,065 grains or 2.295 pounds of moisture for each pound of dry air.

From this data it can readily be seen how necessary it is to supply moisture to the atmosphere in the kiln in order to avoid drawing moisture from the block.

Vapor pressure — An important factor which must be considered is the saturation pressure of the moisture in the kiln atmosphere. This is commonly known as vapor pressure and is the pressure exerted by the moisture in the form of vapor.

It will be noted from Column "C" (Thermodynamic Properties of Dry Air) that, with a relative humidity of 100 per cent, at:

170 degrees Fahrenheit the force is 3½ times as great as the force at 120 degrees Fahrenheit.

180 degrees Fahrenheit the force is 4½ times as great as the force at 120 degrees Fahrenheit.

200 degrees Fahrenheit the force is approximately 7 times as great as the force at 120 degrees Fahrenheit.

Vapor pressure is exerted within the kiln at all times during the curing cycle. It is higher inside than outside the kiln. These two conditions are not in equilibrium, thus moisture will be forced to the outside atmosphere.

The voids in concrete are practically filled with water or moisture at the time block are made. If no moisture is added to the air of the kiln, the saturated block begins to lose moisture by evaporation to the surrounding air in the kiln; the degree of moisture loss is dependent upon the temperature of the curing atmosphere, length of time the units are subjected to this temperature and the differential between existing pressure and saturation pressure.

Relative humidity measurements of the kiln atmosphere, when made under these conditions, may lead to false conclusions.

Such measurements can indicate 100 per cent relative humidity in the kiln atmosphere, when actually the chemically combined water is being removed from the units.

Lost moisture becomes a part of the kiln atmosphere, and while readings indicate ideal curing conditions, the binding ingredient, portland cement, is being damaged through lack of the moisture so necessary for its hydration.

Measurement of heat — The steam curing process is a technical and scientific one. For successful results certain precautions must be observed in order to maintain uniformity of quality in the finished product.

Temperature is one of the important essentials in the process of curing, yet it is a factor to which too little attention is given.

A study of heat distribution to steam curing kilns shows that part of the heat applied goes into the block, pallets, and racks; another portion goes into the roof, sidewalls, and floor. One of the reasons it takes so much steam and time to heat block is that the roof and other sections of the kiln absorb heat at the same time the block is being heated.

The installation of proper temperature indicating and recording equipment will show the kiln conditions at all times and permit the operator to make changes necessary to improve operation.

Another reason for the use of thermometers is to develop a definitely controlled processing cycle. In many instances the block are either not heated enough or heated for too long a period. If heat comes up too slowly it may be due to insufficient steam pressure or quality, or due to leakage in the kiln.

No phase of plant practice varies as widely as it does with respect to curing. This condition reflects the controversial nature of the entire subject of curing.

Curing cycle — The curing cycle is made up of several phases:

I. The kiln is filled and closed.

II. Presetting Period — A presetting period of one to four hours or longer, depending on the type of aggregate, the type of cement used and the season of the year. It is during this period that the initial reaction of the cement-water paste takes place. If this reaction is interfered with by the sudden application of heat, a brittleness may be produced in the units along with the formation of hair cracks. Low initial block and kiln temperatures during the winter season also can have a detrimental effect on the ultimate strength of the units. Therefore, preheating the kiln before and during charging to a minimum temperature between 70 to 100 degrees Fahrenheit is recommended.

Outdoor temperature in winter time must be considered in anticipating strength of units at various ages. Strengths should be developed during the curing cycle. A wide difference in results can exist between summer and winter operations even though procedures are the same.

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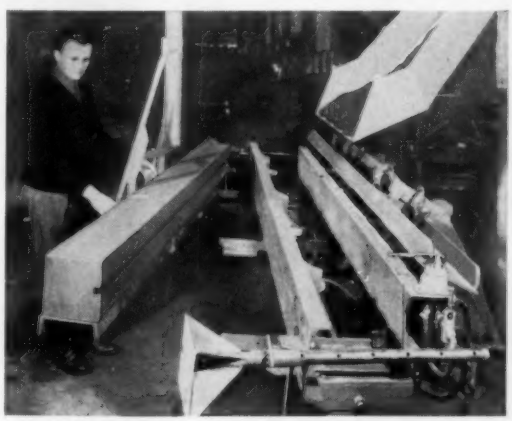

For these reasons every block manufacturer should take immediate steps to obtain this profitable business which can be his with little effort and delay.

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III. Steaming Period — The steaming period is the length of time the steam is introduced into the kiln. This period is best determined for each individual plant by ascertaining the time required to bring the units and the kiln air to equal temperature, coupled with the point at which the block cease to increase in weight. This is termed the point of equilibrium. The procedure for determining the equilibrium temperature follows:

Through a small hole, drilled at a convenient point in the kiln roof, a chain is passed. The upper end of the chain is attached to an arrangement resting on the platform of the scale which is located above the roof. It is important to see that the apparatus functions properly. The scale should be accurate to 0.01 lb. At the lower end of the chain a pallet containing three units is suspended midway between the ceiling and the floor of the kiln. By means of this arrangement the increase in weight of the units during steaming is determined from readings made at intervals of fifteen minutes, until such time as the block does not show further increase in weight.

Direct temperature readings are obtained from a series of thermocouples inserted in the shells of the units on the pallet and also in units located on different tiers of a rack adjacent to the suspended pallet. The leads of the couples are connected to a potentiometer fitted with a quick change switch which records directly in degrees of temperature within seconds of each other.

When dry saturated steam enters the kiln at high velocity it causes a rapid temperature rise. Since the temperature rise of the block lags behind the temperature of the kiln air, this difference in temperatures causes moisture to deposit on the surfaces of the block, with the result that moisture is added to the concrete. The block will continue to take on moisture as long as they remain at or below the dew point temperature of the kiln air.

When the temperature of the units and the kiln air are equal, the units will commence losing water and will continue to do so as long as the steam remains on.

The loss of moisture will be accelerated as the block temperature increases above the kiln air temperature. If the temperature of the air in the kiln is allowed to rise above the equilibrium temperature, the vapor pressure of the block is greater than the vapor pressure of the kiln atmosphere, thereby causing transfer of moisture from the block to the air. This moisture contains water already chemically combined with the cement, thereby retarding the hardening of the cement-water paste.

This indicates the importance of determining the point at which the steam should be shut off.

The equilibrium temperature will vary considerably with the kind of block, the size of the kiln and other factors, but is somewhere between 160 and 180 degrees Fahrenheit.

Once the equilibrium temperature of a kiln is established, it need not be checked unless the type of aggregate is changed. That is, the same kiln used to cure units of two different types of aggregate will have different equilibrium temperatures.

*The following data gives an example of kiln temperatures in degrees Fahrenheit during a curing cycle until a temperature of 170 degrees Fahrenheit was reached when steam was turned off.

Thermocouples were located as follows: No. 1, in the shell of a block on the top pallet; No. 2, in the shell

Rock Products, Page 155, Feb. 1947

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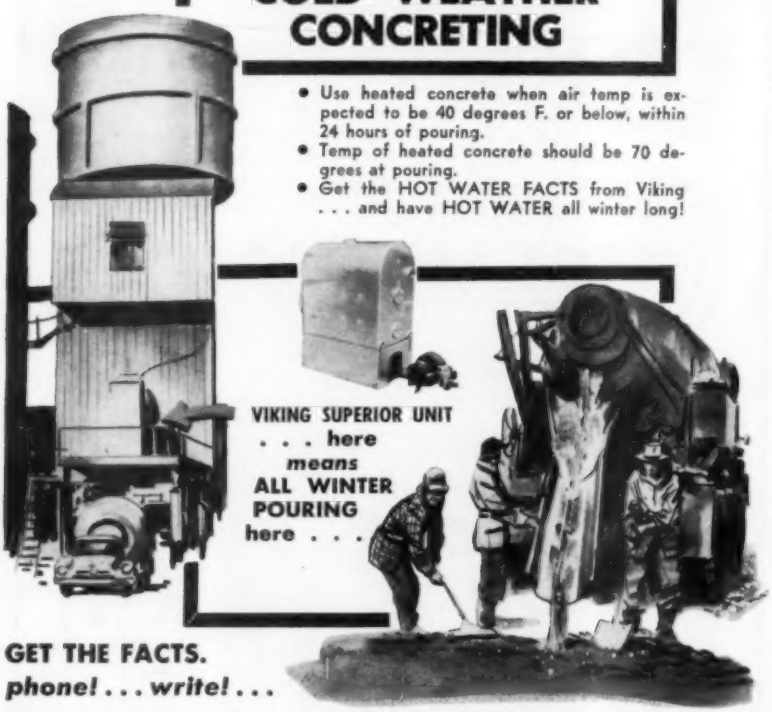

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of a block on the fourth pallet; No. 3, in the shell of a block on the sixth or bottom pallet; No. 4, kiln air at ceiling; No. 5, kiln air midway between the ceiling and the floor; No. 6, kiln air at the floor.

IV. Soaking Period — The soaking period is as important as the steaming time. It is usually governed by the number of kilns available, keeping in mind the fact that the longer the units are allowed to soak the better will be the final results.

As the kiln air temperature decreases, the humidity condition then becomes a factor, since the contents of the kiln are thoroughly saturated with moisture. As long as the air in the kiln is not disturbed by changing, the humidity of the kiln increases as the temperature decreases because the moisture content is relatively constant. An accelerated curing condition is maintained in the kiln during the entire time the temperature is falling to 70 degrees Fahrenheit. Therefore, the longer the soaking period is extended, the better will be the ultimate product.

Temperature drop in a well constructed kiln will be approximately 4 to 7 degrees Fahrenheit per hour.

V. Drying Period — A drying period can be added to follow the soaking period to reduce the moisture content of the units to acceptable standards.

KILN CONDITIONS DURING A CURING CYCLE.

Time	Thermocouple Temperatures						Suspended Weight	
	1	2	3	4	5	6	Assembly	Net Change Per Block
8:15 A.M.	72	68	69	97	82	79	187.62 lb.	—
10:00	97	79	77	99	87	81	187.50	− 0.04 lb.
10:15	114	109	114	125	123	122	188.59	+ 0.32
10:30	130	128	134	137	134	135	189.34	+ 0.57
10:45	142	142	144	149	147	147	189.75	+ 0.71
11:00	155	154	156	159	157	157	190.38	+ 0.92
11:15	164	164	165	168	167	167	190.87	+ 1.08
11:20	170	170	169	171	170	170	191.01	+ 1.13
11:25	168	166	155	164	163	153	191.01	+ 1.08
11:30	168	166	151	164	162	147	190.85	+ 1.04
12:00	163	162	136	161	157	132	190.75	+ 1.04
12:30 P.M.	159	156	132	157	154	125	190.75	+ 1.04
1:00	155	153	127	154	150	122	190.75	+ 1.04
1:30	155	150	127	152	148	119	190.75	+ 1.04
2:00	154	147	127	153	147	119	190.75	+ 1.04
4:30	146	134	118	143	140	118	190.75	+ 1.04

*Graph showing curing conditions during the presetting, steaming and soaking periods.

Kiln-curing of block — An extensive series of curing tests were conducted to ascertain the effectiveness of different curing cycles on heavyweight aggregate block produced under actual plant conditions during the months of June and December.

The variations studied in the curing cycle were:

1. Temperature of kiln at time of charging.
2. Length of holding period.
3. Maximum steam temperature.
4. Length of steaming time at maximum temperature.

Rock Products Feb. 1947.

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5. Length of soaking time.

Every effort was used to keep the variables in manufacture to a minimum. All block tested in the June series, except the high early strength cement specimens, came from a single batch. This was also true for block tested in the December series.

The separate aggregates consisting of pea gravel, sharp and fine sands were blended in such proportions to produce a fineness modulus of approximately 3.70 as recommended in Table V. Actual Combined and Theoretical Grading of Aggregates — Concrete, February, 1956, Page 40.

Air entraining and high early strength cements were used for comparison with each other, for strength results and yield of block per batch. Surface moisture and water added per batch were carefully gaged. A total mixing time of 8 minutes (2 minutes dry and 6 minutes wet) was decided on as determined from experimental results.

The results indicate that weather conditions have an important bearing on the strength of the units and that curing is of much greater importance during the winter months than during the warmer summer months.

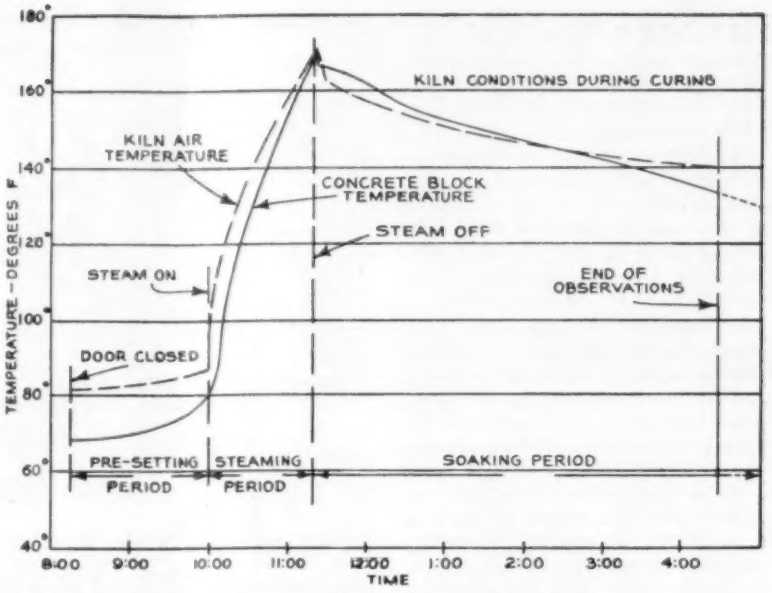
The results of the summer series of tests showed very slight differences in strength even with the variations of curing techniques adopted, ranging from 140 to 180 degrees Fahrenheit.

In winter, because of the relatively low outdoor temperature the block do not gain strength after being stacked outside.

It is, therefore, necessary during the winter to develop as much strength as possible in the curing kiln.

The objective of the manufacturer is the economical production of a uniform quality unit throughout the year. This requirement necessitates a study of the seasonal curing conditions coupled with the judicious adjustment of the cement factor in accordance with the outdoor temperature and also with the size and type of the unit being produced.

Test results indicate that the curing kiln temperature should be brought up close to 100 degrees Fahrenheit before the blocks are placed in the kiln. Tests have proved that a low initial concrete temperature along with a low curing kiln temperature during the charging and holding periods in winter time have detrimental effects on the strength of the units.



● Curing conditions during presetting, steaming and soaking.

In general, the holding time should not be less than two hours after the kiln doors are closed. In some instances a holding time of four hours will be required.

The conclusions drawn from the test results indicate that an hour or two extra holding time at the beginning of the curing cycle is more productive of good results than the same amount of time in the soaking period.

Where heavyweight aggregate is used, a maximum curing temperature of 160 to 165 degrees Fahrenheit will usually be sufficient. With lightweight aggregate a temperature of approximately 170 degrees Fahrenheit will be ample.

With well insulated curing rooms, the steam can be shut off immediately after the maximum temperature has been reached, if the velocity of the steam is sufficient to yield a uniform maximum temperature throughout the kiln.

The steam should be exhausted at the end of the soaking period of approximately 12 hours, at which time the temperature, in a well constructed kiln, will have dropped to approximately 120 degrees Fahrenheit.

After exhausting the steam from the kiln, it is again closed tightly. The block should be held as long as possible in the kiln before yarding.

An outline of the details of this series of tests and compression results made by the author, is to be found in Report #39, issued January 13, 1953, and Report #47, issued May 28, 1954, by the National Concrete Masonry Association.

BOOK REVIEWS

SUGGESTION PLAN GUIDE. *Research Division, Society for Advancement of Management, 74 Fifth Avenue, New York 11, New York.* $1.50.

A special research committee of the Reading, Pennsylvania, chapter of the Society for Advancement of Management has made a study of employee suggestion systems. Here is a formal system combining what the committee found to be the most successfully used policies and procedures.

THE HANDBOOK OF POWERED INDUSTRIAL TRUCKS. *Industrial Truck Association, Ninth and F Streets, Washington 4, D. C. 96 pages,* $5.00.

This publication has been designed to answer the needs of purchasing, operating, production, maintenance, and material handling personnel. It contains case studies showing specific industrial truck applications, as well as illustrations of various truck types, attachments, containers, and load carrying devices.

One section is devoted to selection of trucks; other material has been developed to aid a company in driver training and preventive maintenance programs and procedures.

RINITY WHITE Whitest in the bag . . .
test in the mix . . . whitest in the completed job. Use
nity White Cement for architectural concrete units; ter-
o; stucco; light reflection—wherever a whiter white or purer colors are desired.

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. . . plain or waterproofed

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AUGHMAN BULK MATERIAL
RANSPORT BODY . . .

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ement, Salt, Sand,
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FOR ADDITIONAL INFORMATION
write for new illustrated bulk body catalog.

- **NEW 9" NON-CLOGGING AUGER.** Located at bottom of body. Unloads 1 to 2 tons per minute, depending on material.
- **COMPARTMENTED BODY.** Relieves weight of full load on conveyor. Compartment doors individually tripped as load empties.
- **SCIENTIFICALLY SLOPED SIDES.** Assure constant material feed to auger. For any dry, free-flowing, non-abrasive material.

Dealers wanted in Selected Areas

BAUGHMAN MANUFACTURING COMPANY

151118 SHIPMAN ROAD **JERSEYVILLE, ILLINOIS**

5. Length of soaking time.

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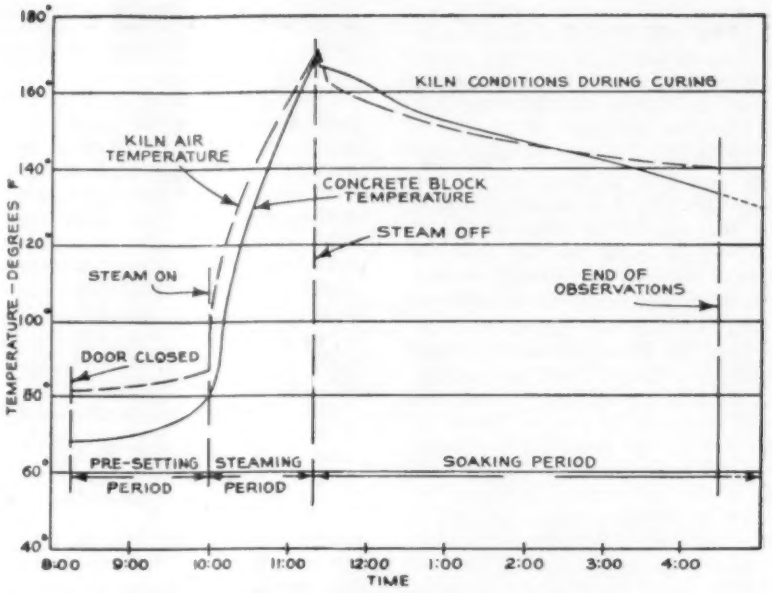

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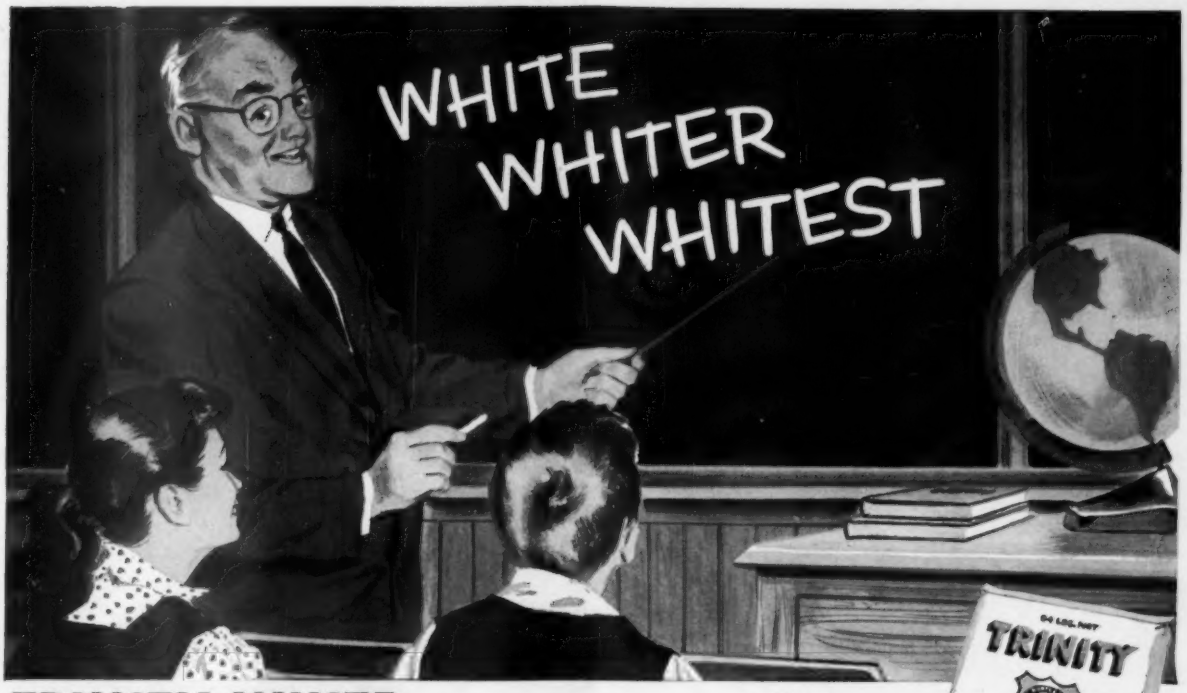

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Whitest in the bag . . . whitest in the mix . . . whitest in the completed job. Use Trinity White Cement for architectural concrete units; terrazzo; stucco; light reflection—wherever a whiter white or purer colors are desired.

As white as snow

. . . plain or waterproofed

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BAUGHMAN BULK MATERIAL TRANSPORT BODY . . .

designed for

Cement, Salt, Sand, or any free flowing material

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write for new illustrated bulk body catalog.

- **NEW 9" NON-CLOGGING AUGER.** Located at bottom of body. Unloads 1 to 2 tons per minute, depending on material.
- **COMPARTMENTED BODY.** Relieves weight of full load on conveyor. Compartment doors individually tripped as load empties.
- **SCIENTIFICALLY SLOPED SIDES.** Assure constant material feed to auger. For any dry, free-flowing, non-abrasive material.

Dealers wanted in Selected Areas

BAUGHMAN

BAUGHMAN MANUFACTURING COMPANY

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NEWS *from the Manufacturer*

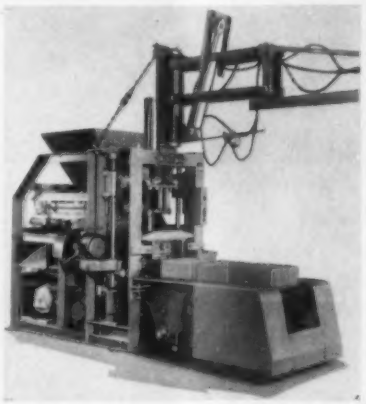
METHODS
MATERIALS
EQUIPMENT
TOOLS

Changes in Pallet Feeder and Pallet Carry-Out Device Are Featured on Kentwin Two-Block Machine

The Kent Machine Company, Cuyahoga Falls, Ohio, has redesigned the Kentwin model, two block, plain pallet machine.

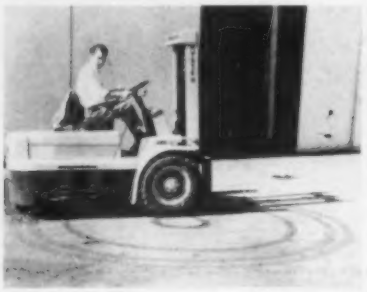
According to the manufacturer, the heavier pallet feeder is electrically driven through chains which cannot reverse, and the pallet carry-out device features V-belts which prevent block breakage. Fixed, even spacing prevents the pallets from bumping together.

A new type of off-bearing hoist has been added, and a higher powered motor and rubber insulated jack cylinder. Pivoted vibrator motor brackets keep V-belts tight. Automatic operation is under control of push buttons.



Hyster Trucks Now Have Optional Power Steering

Power steering for the Hyster series of pneumatic-tired trucks in the 3000, 4000, and 5000-pound capacity range is now available as optional equipment. The three trucks, with attachments and accessories, comprise the line which was released by Hyster last fall.



According to the manufacturer, dependable steering action is assured with the new power steering system because of the use of a flow divider in the hydraulic system that directs fluid first to the power steering unit.

Power steering on the Hyster 30, 40, and 50 can be installed at the factory or in the field. More information is available from Hyster Company, Danville, Illinois.

Auxiliary Truck Brakes Manufactured by Brimco

A hydraulic braking system with parking brake attachment, produced by Brimco Manufacturing Company,

is offered to supplement air-brake systems. The complete unit adds 40 pounds to the total truck weight at the axle.

Parking brake attachment holds a fully loaded truck on a ten degree grade. According to the manufacturer, use of the brake permits a truck to start without building up air pressure, and permits turning off the motor during stops. Also, driving on ice is safer because the brakes can be applied gradually and evenly. More information is available from Brimco Manufacturing Company, 1820 Industrial Road, Salt Lake City, Utah.

Redesigned Vibrator Now Available from Cleveland

The Cleveland Vibrator Company, 508 Public Square Building, Cleveland, Ohio, recently announced a redesign of their RC-50 Electric Vibrator, used on bins, chutes and hoppers for handling bulk materials. The new unit develops a maximum vibrating impact of 2250 pounds, an increase of 810 pounds over the old design.

The redesigned RC-50 weighs in at 84 pounds and has been reduced in length from 14¾ inches to 13⅛ inches. The mounting base has been changed for installation and supporting purposes. Operation is on the rotating eccentric weight principle. The unit can be equipped with adjustable eccentrics permitting the vibration impact to be varied between 750 to 2250 pounds.

PREVENT CONCRETE "BUILD UP" with AMAZING, NEW KLEEN-MIX

Forrer's remarkable, new KLEEN-MIX is an easy, inexpensive way to prevent concrete "build up" on mixers, hoppers, conveyors, skip hoists, etc. Spray or brush on KLEEN-MIX the night before, and at the end of the day, only a putty knife and brush are needed to whisk off hardened concrete.

Note these advantages!

- Cuts clean-up time in half
- Requires only brush and scraper
- No chisel or air hammer needed
- Increased equipment life
- Easy to apply

Order a trial supply today!

FORRER'S 2225 No. Humboldt Ave., Milwaukee 12, Wis.

FORRER'S STAR PRODUCTS FOR MASONRY

★ X-L 100.
Powdered concrete plasticizer

★ Kleen-Mix.
Eliminates "build-up" on hoppers and mixers

★ Hydro-check.
The perfect fast-setting, water-proofing cement additive

★ De-Solv-It.
Dissolves concrete — without harming metal

★ Accelerator.
Speeds setting concrete — down to 15° F

★ For-Air.
Concentrated air entraining agent

★ Ramsey Moisture Probe.
Measures sand moisture content

★ Ramsey Moisture Meter.
Regulates water in concrete mix automatically

★ Kover-Kote.
Transparent protective film for ready mix trucks.

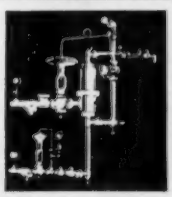
Forrer's
PRODUCTS FOR MASONRY
SINCE 1926

...it's easy to pour concrete in sub-zero weather...

..... when you use a

Pick

INSTANTANEOUS
STEAM INJECTION
WATER HEATER

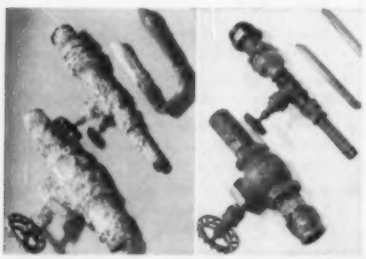


PICK MANUFACTURING CO. • WEST BEND, WIS.

Disolvex Bath Dissolves Old Concrete from Tools

An organic and inorganic synthetic liquid called Disolvex, which works on the binding elements in concrete, is being manufactured by Industrial Synthetics Corporation, 2000 West Walnut Street, Chicago, Illinois. Its usefulness to ready mixed concrete producers is its catalytic dissolving action in cleaning tools.

Cleaning time varies with the strength of the solution and the age



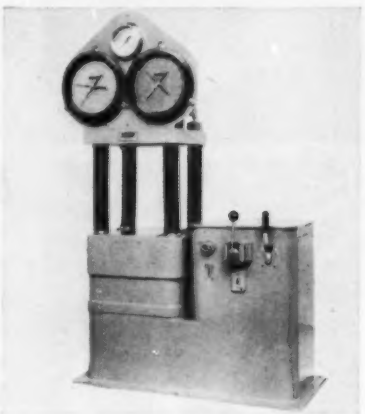
and thickness of the concrete. Usual cleaning time is from four hours for concrete up to one-fourth inch thick and six months old, to over night for older and thicker concrete.

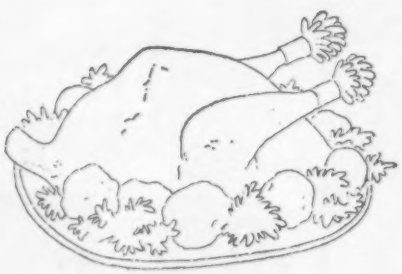
The chemical comes in concentrated form and will work on any concrete mix except concrete mixed with rubber. Dilutions from one part of Disolvex to five parts of water, up to one part of Disolvex to 20 parts of water, are possible, depending on age and thickness of concrete to be removed.

Forney Machine Is Equipped to Test Compression and Flexure of Various-Sized Concrete Units

Designed especially to release more expensive testing machines for other work is the new Forney Model LT-600, a 350,000-pound capacity machine for testing compression and flexure of concrete and concrete products. It can be equipped with standard accessories for testing 2-inch x 2-inch and 6-inch x 6-inch cubes; 3-inch x 6-inch and 6-inch x 12-inch cylinders, concrete block up to 8 x 12 x 18 inches, and brick.

The low pressure gage is calibrated in pounds 0 to 60,000; the high pressure gage, 0 to 350,000. The small gage is a certified test gage for spot checking and recalibration. More information is available from Forney's Incorporated, Box 310, New Castle, Pennsylvania.





IF YOU WANT
HOT BUSINESS
LEADS
SERVED UP
ON A PLATTER
SEE PAGE 12

T-34

On a Small Investment

You Can Become a Local Manufacturer of Concrete Drain Tile

With a Champion machine you can convert $21.50 worth of sand and cement into $80.00 worth of superfine concrete drain tile at small labor cost and overhead. And at $80.00 for a 1000 4" tile you are way below the price of ordinary clay tile. Results: a better product—lower prices—broader markets — and a generous mark-up for yourself. All due to the fact that local manufacturing eliminates the three big costs that burden clay tile — freight, middlemen's profits, and breakage. An opportunity in every community. Champion machine is compact, versatile, easy to operate. Get all the facts by writing at once for the Champion book.

W. E. DUNN MFG. CO.
526 W. 24th Street
Holland, Mich.

BLOK-LOK (for Masonry Walls)

Flush-welded at cross ties for greater strength; controls shrinkage, settlement and temperature cracks. Blok-Lok masonry wall reinforcement is marked and packaged for easy identification and handling; in bundles of 25 pieces, 10' or 12' lengths.

Please send me the following:

☐ 1957 Sweets Brochure (2c/Aa). ☐ Block and Blok-Lok Calculator

I am a ☐ Block Manufacturer ☐ Other

AA WIRE PRODUCTS COMPANY

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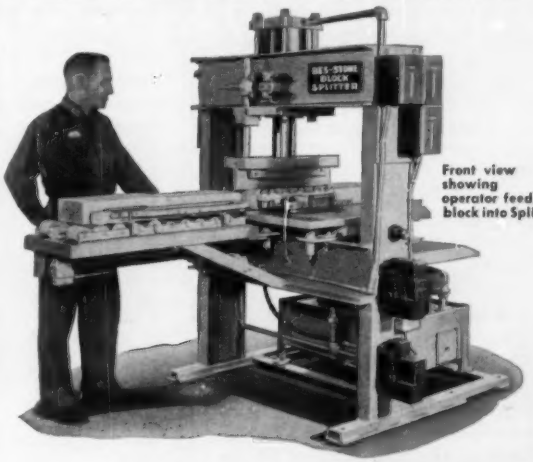
400 W. Madison St. Chicago 6, Ill.

Install a BES-STONE Splitter

You can greatly increase block sales and add to profits by using a Bes-Stone Block Splitter. Architects and builders are sold on Bes-Stone Split Block because of its beautiful quarried stone appearance and wide range of adaptability. With its powerful, hydraulic operation, the Bes-Stone Splitter handles up to 900 units per hour. All straight line cuts. No cull block. Quickly adjustable for various heights. Finished Split Block is automatically removed from under the splitting knife by the incoming block. Quiet, safe operation.



Front view showing operator feeding block into Splitter.

. . . and this

PONY TRIMMER

Comes in Handy for

Trimming Block on the Job

Trims off the ends of split block up to 8" in width. Pressure is supplied by a hand-operated hydraulic pump having a capacity of 12 tons. Compact, lightweight, and easily portable from job to job.

Ask your Besser representative for literature, or write:

BESSER COMPANY

Complete Equipment for Concrete Block Plants

ALPENA, MICHIGAN, U.S.A.

COMMENT
from the
BUTLER ENGINEER

. . . of a New Paving Record and the Airflomatic

News: a paving contractor in Michigan laid almost a mile of pavement 24 feet wide, 9 inches thick in 9 hours. Had the new Butler TX4 Roadbuilders Plant feeding 3 dual drum pavers . . . And now, having hung up this record, he can't wait to add a fourth paver. When Butler reigns it really pours!

Best production we'd heard of was a contractor who did 4,368 feet of pavement 24 feet wide and 10 inches thick in a 16-hour day. When the Michigan contractor adds that fourth paver (which the Butler TX4 can easily accommodate) we'll have more hot news for your eager eyes.

By the way — *only one operator handled the batching.*

There's a Central Mix Plant in Iowa which we bid on some years back. One of the johnny-come-lately manufacturers bid just a hair or two lower. Plant was built — expensive concrete bulkheads and automatic controls. It never worked a full day; valves, cylinders — something critical forever breaking down! Owner finally sold it to a competitor (who had a Butler Plant). He called in the Butler Engineer. It cost over $6000 to make the corrections. Moral? Well, write your own.

The new Butler Airflomatic Cement Feeder's a sensational success. Standard now on the TX4 Roadbuilders and Butler Ready Mix Plants. Cement flows on a cushion of air. No moving parts; no drives or bolts to shear. Replaces troublesome vane-feeders. Can be installed on any plant regardless of make. Why not write for all the dope?

The Butler Engineer

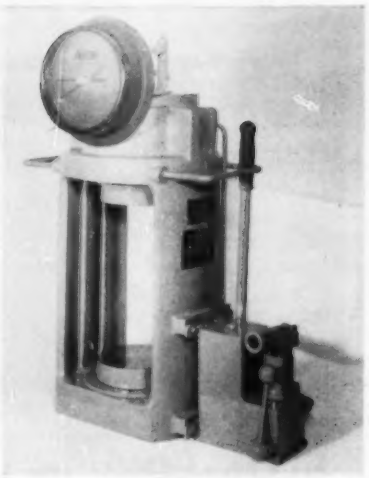
BUTLER BIN COMPANY
WAUKESHA, WISCONSIN

Our Error

The accompanying photograph is of the Forney Model FT-25 portable concrete tester which was described in this section in the September 1957 issue of CONCRETE.

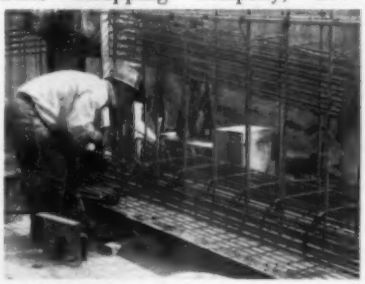
The cut which ran with the former article is of Forney Model QC-125-LD, compression tester designed for testing high strength concrete in the prestressing field. It is factory adjusted to load at between 20 and 50 pounds per square inch per second. Uniformity of loading is within ASTM and AASHO specifications.

Information on both of the concrete testing machines is available from Forney's Incorporated, P.O. Box 310, New Castle, Pennsylvania.



Steel Hoops Bind Tension Wire, Precast Beam Loads

Tensioning strands can be restrained from splaying outward during the tension relieving cycle by binding them with loops of Signode Steel strapping, according to Signode Steel Strapping Company, 2600 North Western Avenue, Chicago 47, Illinois.

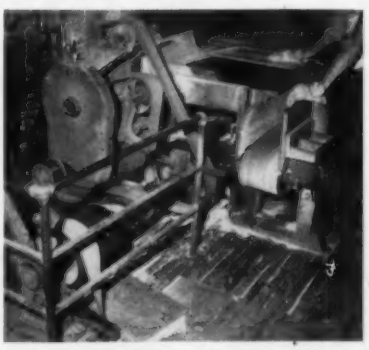


According to the manufacturer, application of five feet of 1¼-inch x 0.35-inch heavy duty strap replaces four and one half feet of No. 6 reinforcing rod. The strapping is applied after the tensioning strands have been run out and while the strand is under tension. Because the strap tends to spring away from the strands until it is drawn into a loop with a special tensioning tool, there is no risk of snagging, kinking, or nicking.

Strap from the same reel and applied with the same tools can also be used for securing prestressed castings loaded on flatbed trucks or rail cars and for tying concrete column moulds.

Goodrich One-Ply Belt Works on Small Pulleys

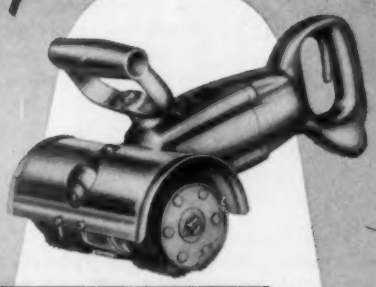
Unicord, a transmission belt used on drives, is a new belt manufactured by B. F. Goodrich Industrial Products Company, Akron, Ohio. According to the manufacturer, length uniformity of the belt is maintained because the belt is manufactured under controlled humidity conditions. Each belt is packaged in a hermetically-sealed polyethylene bag to prevent moisture from entering the cords during delivery and storage.



Because the tension member consists of one-ply synthetic cord, there are no plies to separate. Folded edges are formed by a black two-ply envelope cover. Belts are available from four to six inches in width and 100 inches to 45 feet in length. They are recommended for use on pulleys as small as four-inch.

Chip Away

SCALE
RUST
PAINT



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CLEANING TOOLS
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Surfaces are cleaned quickly with AURAND on the job. Hardened steel cutters zip away stubborn accumulations from iron, steel, brick, concrete. Adjustable depth shoe protects surface . . . assures uniform cleaning. No special skill required. Renewable cutter heads. Two sizes in both electric and pneumatic models. Lightweight.

AURAND MFG. & EQUIPMENT CO.
1210 Ellis St., Cincinnati 23, Ohio

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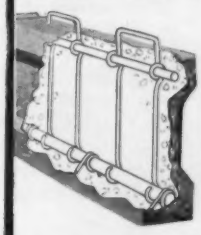
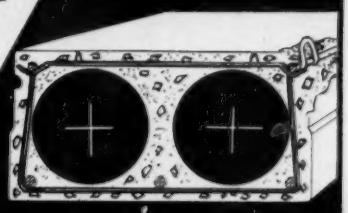
it's Automatic!
Fast, Precise Reinforcing for Pre-cast Concrete products



Stirrups, Chairs and Hangers

STIRRUPS and LEVELING LOOPS for prestressed concrete cored slabs.
• Special sizes
• Prompt delivery

Designed for ease of use in the reinforcing of concrete joists and other pre-cast concrete products.



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serving the Concrete Products Industry
AUTOMATIC
SPRING COILING CO.
4044 West Thorndale Ave., Chicago 30, Ill.

"color standards for the concrete industry"

Synthetic Iron Oxide
HTS
CHOCOLATE BROWN
No. 6145

- A TRUE BROWN
- HIGH TINCTORIAL STRENGTH
- 3-4 LBS. PER BAG OF CEMENT PRODUCES A RICH BROWN COLOR
- NO RED OR PURPLE CAST

FRANK D. DAVIS COMPANY
2704 Santa Fe Ave., Los Angeles 58, Calif.
eastern office: Meadow Rd., Nixon, New Jersey

COUNT MIXER REVOLUTIONS...

Qualify for STATE and FEDERAL truck mixer jobs

Deliver a BETTER MIX

Install Durant Productimeter 3-Y-8440 on your trucks to count exact number of mixing revolutions.

1 COUNTER CAN BE CAB MOUNTED FOR EASY CHECKING
2 ROUGH ROAD JARRING WILL NOT "ADD" COUNTS
3 COMPLETE KIT — NOTHING ADDITIONAL NEEDED
4 ENTIRE ASSEMBLY DUSTPROOF AND WATERPROOF
5 DESIGNED FOR 6V. OR 12V. SYSTEMS — EASY INSTALLATION

Counter is dashboard mounted (top illustration) Switch mounted on frame . . . cam actuated by drum.

Send for Descriptive Literature

Representatives in Principal Cities
DURANT MANUFACTURING CO.
1957 N. Buffum St., Milwaukee 1, Wis.
57 Thurbers Ave., Providence 5, R.I.

PRODUCTIMETERS
SINCE 1879 Count Everything

Faircrete Conveyor Has Additional Accessories

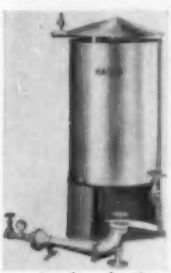
Swivel wheels and other accessories are now available for the Faircrete conveyor from the Fairfield Engineering Company, Marion, Ohio.

According to the manufacturer, the swivel wheels permit the Faircrete to be moved along the wall

without changing the position of the conveyor in relation to the forms.

A new and deeper receiving hopper is now standard equipment, also. More information is available from the company.

Hauck Gas Heater Offered to Take Place of Boiler



Hauck Manufacturing Company has developed and placed on the market a gas heater which delivers hot water required in ready-mix concrete production. It eliminates need of a boiler, and can be moved by a small crew. The heater has conical steel coils of one-inch seamless steel tubing and is fitted with recirculation to provide hot water to 190 degrees Fahrenheit.

Model 301G, single coil type, heats 1350 gallons of water per hour with a 50-degree Fahrenheit rise, or 450 gallons per hour with a 140-degree Fahrenheit rise. Model 312G, double coil type, heats 1660 gallons per hour with a 50-degree rise, or 600 gallons per hour with a 140-degree rise from inlet temperature. Thermostatic control can be provided.

The burner utilizes LP-gas, propane, or butane and can be arranged also for natural, manufactured, or mixed gas. More information is available from Hauck Manufacturing Company, 124-36 Tenth Street, Brooklyn 15, New York.

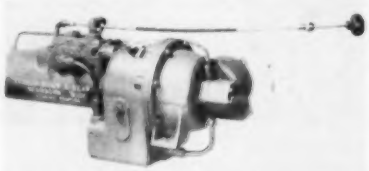
Slump Testing Apparatus Announced by Soiltest

The Ball Penetration Apparatus, a new instrument for determining the consistency of fresh concrete is now available from Soiltest, Incorporated, 4711 West North Avenue, Chicago 39, Illinois.

The apparatus is made in accordance with ASTM specifications. It consists of a cylinder with ball shaped bottom and a handle weighing 30 pounds. A lightweight metal frame guides the handle and serves as a reference for measuring the depth of penetration of the ball. Fresh concrete may be tested either as placed in forms or in a suitable container.

Design Front Power Take Off for Truck Mixer Only

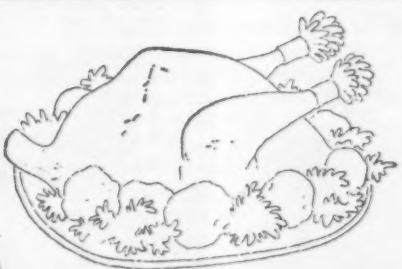
The Transmission & Gear Company, 10421 Haggerty Avenue, Dearborn, Michigan, has introduced a line of front end power take offs designed and developed principally for the truck mixer industry. They are designed for installation as original equipment and for replacement use



on any make or model truck.

Model RT-632 front end power take off features a hydraulically-actuated clutch running in oil which permits disengaging the mixer at any time. This model is operable from within the truck cab. Model RT-632-A incorporates a manually shifted gear tooth type coupling for engaging and disengaging the mixer drive. Model RT-632-B has no disconnecting means in the front end power take off proper.

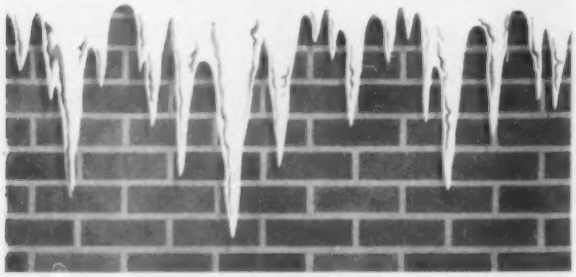
DON'T LOSE YOUR HEAD...



if competition is getting business you want . . . just see page 12

NO-FREEZE

multi-purpose admix provides Winter protection for concrete and mortar



- Consists of a chemically concentrated colorless solution that can be added directly to the gauging water or to ready-mixed cement at the plant or job site.
- As little as 1 gallon per bag of cement prevents freezing at temperatures as low as 15°F.
- Cuts normal setting time from 3¼ hours to 1¼ hours.
- Helps mixes develop 3-day strength within 24 hours—also increases ultimate strength.
- Reduces normal use of tarpaulins and heat from 1 week to approximately 24 hours—also permits earlier removal of forms.

For complete details, write for our new 2-page catalog to Dept. H 63-11101.

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Sun Chemical Corporation
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this new Erickson is

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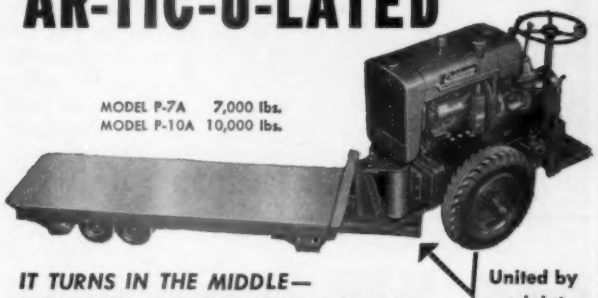


IT TURNS IN THE MIDDLE— TAKES THE CORNERS LIKE A BREEZE

Write for literature

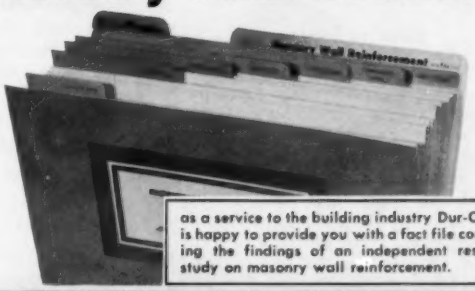
Erickson has created a revolutionary new idea in platform trucks—it's ARTICULATED—with a joint or pivot between platform and drive wheels. Models P-7A and P-10A are the units for the new and unusual operations,—autoclaves, for instance—where you need utmost maneuverability with heavy duty capacity. With the ARTICULATED design, platform bed can be made up to 10 or 12 feet and still handle heavy, bulky loads with ease. These articulated models are in addition to the veteran Erickson P-5 and P-7 standard models, and built with the same rugged durability.

the WORKHORSE of LIFT TRUCKS

Erickson
POWER LIFT TRUCKS, Inc.
221 St. Anthony Blvd. N. E., Minneapolis 18, Minn.

THE FACTS RECOMMEND

DUR-O-WAL
masonry reinforcement



as a service to the building industry Dur-O-wal is happy to provide you with a fact file containing the findings of an independent research study on masonry wall reinforcement.

DUR-O-WAL

Rigid Backbone of Steel For Every Masonry Wall

Dur-O-wal Div., Cedar Rapids Block Co., **CEDAR RAPIDS, IA.** Dur-O-wal Prod., Inc., Box 628, **SYRACUSE, N. Y.** Dur-O-wal Div., Frontier Mfg. Co., Box 49, **PHOENIX, ARIZ.** Dur-O-wal Prod., Inc., 4500 E. Lombard St, **BALTIMORE, MD.,** Dur-O-wal of Ill., 119 N. River St., **AURORA, ILL.** Dur-O-wal Prod. of Ala., Inc., Box 5446, **BIRMINGHAM, ALA.** Dur-O-wal Inc., 165 Utah Street, **TOLEDO, OHIO**

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Please send Dur-O-wal file to
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Please furnish name of my nearest dealer ☐

EDMONT CASE NO. 615: For handling concrete block in a Michigan plant, canvas gloves lasted only 1 shift. Edmont recommended a triple-thick plastic palm coated glove (No. 31 Monkey Grip) which wore 24 shifts, cutting glove costs 85%.

Block plant cut glove costs 85%

No. 31 Monkey Grip triple-thick palm

In case above, the Edmont-recommended glove outwore canvas 24 to 1 because it fits the job of handling rough, abrasive concrete and cinder block better than any other glove made. Its triple-thick coating of vinyl plastic has unequalled abrasion resistance. Excellent non-slip grip prevents accidents. Perfect hand-fitting pattern increases comfort.

Free Test Offer To Listed Firms: Describe your operation. From over 50 types of Edmont gloves, we will recommend the one that fits your job and supply samples for on-the-job testing.

Edmont JOB-FITTED GLOVES

Edmont Manufacturing Company
1206 Walnut Street, Coshocton, Ohio
In Canada write MSA, Toronto

Dodson's Digest

How to extend the concreting season

I left my car at the garage for repairs last week. When they phoned to tell me it was ready, I jumped in a cab to go and pick it up. I decided to stop for a moment to see Jim Rogers, because I was going right past his office.

Jim has only been a highway paving contractor since last June, and I just wanted to see how he was doing. I found him gazing mournfully at a calendar.

"What's the matter, Jim?" I asked. "Not enough days in the week?"

"I was just cussing the fact that our roadbuilding season is too short," he replied. "Cold weather is starting to set in, and I'm having trouble getting my concrete to set. Looks like I'm about through for the winter."

"Wait a minute," I said. "It sounds to me like you're not using Calcium Chloride in your concrete."

"No, I'm not," Jim admitted. "But how can Calcium Chloride be of any help?"

"Calcium Chloride gives concrete higher early strength," I explained. "So you get faster hardening. This makes it practical to work in colder weather . . . lets you extend your roadbuilding season at both ends. In many climates, Calcium Chloride permits concreting all year long."

"But costs are high enough now, without adding more!" Jim exclaimed.

"Calcium Chloride *reduces* your costs," I assured him, "because it cuts the all-important time factor. In addition to faster hardening you get increased workability . . . your men can handle the concrete faster. And you know that time is money in the roadbuilding business."

"Time is money in the *cab* business, too, buddy," said a bored voice from the doorway. "In fact, right now it's $10.45 worth, and the meter's still running!"

— L. D. Dodson

P.S. — For more information on how to use Wyandotte Calcium Chloride for better concreting this winter, you'll want to read our folder, "How To Make Better Concrete Products and Ready-Mix." To get your free copy, just drop me a line. *Wyandotte Chemicals Corporation, Wyandotte, Mich. Offices in principal cities.*

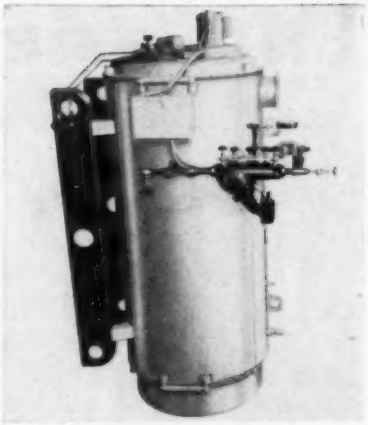
Wyandotte CHEMICALS

MICHIGAN ALKALI DIVISION
HEADQUARTERS FOR CALCIUM CHLORIDE

Monitor Boiler Available for Smaller Company Use

Cleaver-Brooks Company, Milwaukee, Wisconsin, is manufacturing the Monitor packaged boiler for small and medium sized processing plants. The unit is available through 60 horsepower or 2,070 pounds of steam per hour and can be fired with oil or gas or furnished with a combination burner. A 40 horsepower Monitor stands 53 inches high.

According to the manufacturer, a vent in the Monitor which removes combustion gases from the boiler room eliminates the need for a chimney. The package is factory assembled and tested. The manufacturer furnishes field starting service, adjustment and operator training at the job site. More information is available from Cleaver-Brooks Company, Department M, 326 East Keefe Avenue, Milwaukee 12, Wisconsin.



Stanco Crane Maneuvers in a 360-Degree Arc From Its Position in the Space Behind the Truck Cab

A new hydraulic, one-man-operated truck crane has been announced by Stanco Manufacturers and Sales, Incorporated, 1931 Pontius Avenue, Los Angeles 25, California. Manufactured originally in Sweden, and known as the Hiab 170, this truck crane requires 15 inches of space between the cab and truck bed, leaving the truck bed open for load. When not in use, the crane folds down into its space behind the cab.

Lifting capacities range from 6000 pounds on the shortened boom of five feet, to 2500 pounds on the full 13-foot boom. Boom length is adjustable through hydraulic control. The crane lifts up to 20 feet above ground level in a 360-degree arc at a maximum speed of 20 inches per second.

Edick Laboratories Offer New Concrete Conditioner

A lime solvent masonry cleaner and concrete conditioner called "Etch" has been introduced by Edick Laboratories, Incorporated, 427 West National Avenue, Milwaukee, Wisconsin.

According to the manufacturer, the solution formed by adding water to the Etch powder contains agents which loosen dirt and grime and assist the lime solvent in breaking the bond of splashed mortar.

Etch is available in No. 2 sized containers and in No. 25, 50, and 100 polyethelene-lined fibre drums. It will be distributed in part through concrete block and ready-mix concrete plants.

CURING ROOMS—WEST ALLIS CONCRETE PRODUCTS CO., WEST ALLIS, WISC.

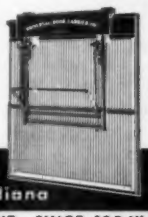
NOBODY'S KIDDING WEST ALLIS

Most block producers are "good eggs"—but "hard boiled" equipment buyers. They're not easily taken in by titillating talk and perfumed prices. They're after *quality*. Equipment that will *make* 'em money and *save* 'em money by superior performance, dependability, and durability. That's why most "tough customers" are *our* customers.

Universal

KILN DOORS and DOOR CARRIERS

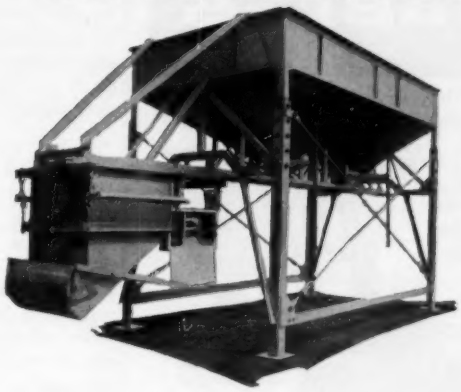
UNI-SEAL Superior Door Gasket and Cement
UNI-COAT Positive Anti-Rust Coating



UNIVERSAL DOOR CARRIER, INC.
1117 Cornell Ave., Indianapolis 2, Indiana
"SPECIALISTS IN KILN CLOSURE EQUIPMENT—SINCE 1904"

WINSLOW BINANBATCH

COST SAVING EQUIPMENT—FOR USE WITH 10S-11S-14S-16S MIXERS—AND AT CONCRETE PRODUCTS AND PIPE PLANTS



OVERHEAD BIN CAPACITY 23 OR 40 TONS

Binanbatch can batch and discharge into one or two mixers. Hundreds of users of this equipment can tell of the cost saving advantages of the Binanbatch.

We offer batching bins for ready mix business at low investment

WRITE FOR COMPLETE DETAILS

WINSLOW SCALE COMPANY

P. O. BOX 1198 • TERRE HAUTE, IND.

The modern, effective way to handle cement for rear discharge!

OMAHA STANDARD

Air-Slide
CEMENT TRAILER

incorporates the Fuller Air Slide Principle

Will cleanly evacuate 100 barrels of cement in 10 minutes. No pounding or vibrating necessary. Air pressure gives complete rate of evacuation control. Low height and perfect load distribution. Fast loading through a minimum of 3 roof hatches. Hopper bottom gravity flow models also available.

Prices and weights quoted on request.

Distributorships available in certain areas

"Custom-Made Material Trailers—for ANY Commodity"

OMAHA STANDARD
2401 W. Broadway, Council Bluffs, Iowa

NOW!

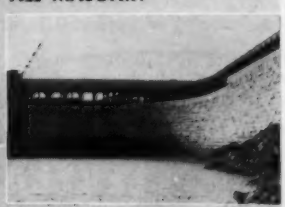
PERMANENT RESTORATION . . . REPAIRING . . . AND MAINTENANCE

PERMAGILE®

THE ONLY PROVEN product which will actually weld masonry materials with the bond many times stronger than the masonry itself.

PERMAGILE
WILL PERMANENTLY JOIN, FILL, CLAD, OR SURFACE CONCRETE AND ALL MASONRY

for MODERN AND EFFECTIVE MAINTENANCE



Croton Dam granite blocks permanently restored with PERMAGILE.

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YOUR MASONRY MATERIALS

PERMAGILE CORP. OF AMERICA
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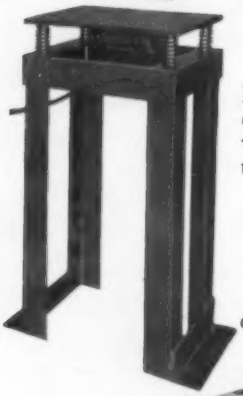
VIBRATING TABLES

Designed and engineered
for concrete products manufacturing

Air operated vibrating tables



Electrically operated vibrating tables

Tables designed for conveyor line operation

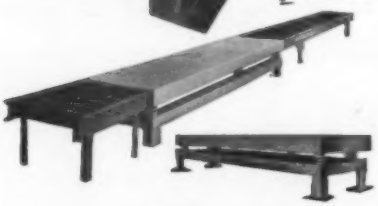
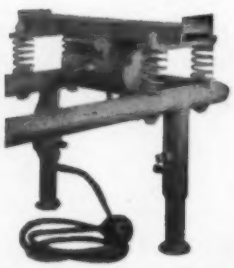


Table components for self assembly



Our business is solving your vibration problems. Write for complete engineering data and literature.

2708 Clinton Ave. • Cleveland 13, Ohio

NEW LITERATURE

CONVEYOR CATALOG—A 36-page catalog describes job-engineered conveyors and pre-engineered conveyors manufactured by *Pioneer Engineering*, 3200 Como Avenue, Minneapolis 14, Minnesota. Accessory items are included.

EXHAUST PURIFIERS—Oxidization of carbon monoxide, fumes and odors from gasoline, LP-gas and diesel-powered equipment, is illustrated and described in a four-page folder published by *Oxy-Catalyst, Incorporated*, Wayne, Pennsylvania. Given are technical characteristics and typical elimination data for the OCM Catalytic Exhaust Purifier, the OCM Dieseler, and the Oxy-Muffler.

CONCRETE CASTING FORMS—Bulletin #300 describing the Form-Crete casting forms is now available from *Food Machinery and Chemical Corporation*, Florida Division, P. O. Box 1718, Lakeland, Florida.

FORM COATING—A four-page illustrated brochure on Form-Saver coating for plywood form panels is available from *L. Sonneborn Sons, Incorporated*, Building Products Division, Department FS, 404 Fourth Avenue, New York City, New York. Sketches illustrate the step-by-step treatment of plywood forms.

DUST COLLECTION—"How much are you paying for dust?" is the theme of a two-color publication issued by *Torit Manufacturing Company*, Walnut and Exchange Streets, St. Paul, Minnesota. The literature explains economies of dust control with Torit dust collectors. Photographs and applications stories demonstrate typical installations.

WATERTIGHT MASONRY—A folder by the Master Builders Company, 7016 Euclid Avenue, Cleveland 3, Ohio, has been published entitled "Design and Specification of Watertight Masonry." The bulletin outlines six considerations, covering ingredients and proportioning; compatibility of brick and mortar; shrinkage and bleeding; separation cracks; mechanical disturbance; proper protection.

WIRE REINFORCEMENT—Designs, tables, and data have been included in the revised edition of Design Manual published by the *Wire Reinforcement Institute*, Department 50, 1049 National Free Press Building, Washington 4, D. C. Application and installation of wire fabric in concrete construction are discussed in reference to ACI and ASTM specifications.

BLOCK MACHINES—A six-page brochure detailing specifications of the Gocorp "Trustee" block machines has been published by the *Gene Olsen Corporation*, 405 Grace Street, Adrian, Michigan.

JACKING SYSTEMS—A catalogue of synchronized jacking systems developed by *Elgood Equipment Company*, 372-80 Ten Eyck Street, Brooklyn, New York, is available which includes a special index of hydraulic equipment used in prestressing.

FORK TRUCKS—Specifications and operating characteristics of the Clarklift Y350 and Y400, outdoor fork trucks of 35,000-pound and 40,000-pound capacities, are contained in a six-page, four-color catalog available from Industrial Truck Division, *Clark Equipment Company*, Battle Creek, Michigan.

PRECASTING, PRESTRESSING FORMS—A two-color booklet illustrates Watco forms manufactured by the Concrete Form Division of *Plant City Welding and Tank Company*, P. O. Box 1308, Plant City, Florida. Specifications, sizes, and photographs of installations in casting yards are included.

TENSIONING MATERIALS—Prestressing products of *John A. Roebling's Sons Corporation*, Trenton 2, New Jersey, are published in "Tensioning Materials for Prestressed Concrete."

CLASSIFIED ADS

$10.00 per column inch. Closing date for classified advertising copy is 15th of preceding month.

BOILER FOR SALE

Bison Compact 10 H.P. with industrial size oil burner, automatic water feeder, boiler water conditioner, smoke stack. Used two years. Perfect condition.

$600.00 complete.

CARL M. MOMM
RD No. 2 Washington, N.J.
Phone: Murry 9-2062J

FOR SALE

Sacrifice — Brikcrete equipment complete. Racks — pallets — molds — etc. Write or call:

J. GRASSO
119 Ridge Street
Rome, New York

SWAP — SELL — BUY
BLOCK MACHINES

Stearns #7 & 9 Joltcretes	$ 500.00 each
(Joltcrete owners at this price buy one for spare parts.)	
Mold Boxes #7 & 9	150.00 each
Truckman Platform Lift 4000 lbs. capacity	495.00
1—Y-40 Truckman Fork-Lift 4000 lb. Capacity. 1956 Model	3500.00
2—Air Offbearers Steams #7 & 9	250.00 each
2—Hand Lift Trucks	175.00 each
1—Lith-I-Bar 2 Block Machine complete with 1000 plain steel pallets 18" x 22"	$4900.00
100—Racks and cored steel pallets	10.00 each

100,000 pressed steel pallets in stock
(Send tracing or sample for quotation).

WRITE • WIRE • PHONE
Mr. McCaughey

Send in list of equipment you need. If we don't have it in stock, we usually know where we can find it at a bargain.

GENERAL ENGINES CO., INC.
Route 130 Thorofare, N. J.
Phone: Tilden 5-5400

WANTED

General Superintendent. Block plant with three Besser machines. Middle Atlantic area. Must be thoroughly familiar with production, maintenance and quality control.

Write giving background, personal references and present salary.

Wonderful opportunity for qualified man.

Address: Box A-22, care CONCRETE
400 W. Madison St., Chicago 6, Ill.

FOR SALE or LEASE

Old established business. Two-block plain pallet automatic. New racks. New pallets all less than six months old. Steam curing, new building, overhead bins. Lift truck. Tractor. Dump truck. Flat bed. R.R. siding. Located in Iowa.

Address: Box A-21, care CONCRETE
400 W. Madison St., Chicago 6, Ill.

FOR SALE

FMC-180 with motors, switches, and 4" & 8" mold boxes. Dunn No. 2 automatic drain tile machine, with 3", 4", & 6" attachments. Duntex roof tile machine with all attachments and steel pallets. All in good condition and reasonable.

AUTRY CONCRETE PRODUCTS
Route 4, Box 206 Charlotte 8, N.C.

WANTED

Used Block Splitter for small Canadian manufacturer. Will have to be in good condition.

THAMES VALLEY BRICK LTD.
R.R. No. 7, Chatham, Ontario, Canada

FOR QUICK SALE

Complete concrete batch plant including hopper, loaders, scales, and three Rex Moto-Mixers, 3-yard capacity, with 4½-yard aggregate on White Trucks.

M. Seliger
PANHANDLE PIPE & STEEL
Borger, Texas

FOR SALE

60 - 3-block, 72 capacity steel racks	$ 37.50 ea.
1100 - ⅜-18"x26" flat steel pallets	$ 1.75 ea.
1 - 1951 Erickson 6000 lb capacity Fork Truck	$2300.00
1 - Power lift and driven Model D. Truckman	$ 550.00
1 - 15-HP I. R. air compressor with motor	$ 800.00

F. O. B. Holland, Michigan.

H. TIMMER
670 Myrtle Ave., Holland, Michigan.
Phone: Ed 5-8741

FOR SALE

Truckman Platform — 4000 lbs.
Clark Fork Truck — 6000 lbs.
Solid tires — flat forks
Stearns 28' skiploader
Stearns 18' skiploader
Stearns 18' mixer and motor
Joltcrete boxes and pallets
Stearns zipper W/8" attachments
SUBJECT TO PRIOR SALE

CLINE-THORNTON, Inc.
2530 N. Broad St. Philadelphia 32, Pa.
Phone: Sa 2-3800
Representing: THE GENE OLSEN CORP.
Adrian, Michigan.

FOR SALE

One Stearns No. 9 Joltcrete in good condition. Price $400. Three additional mold boxes, $100. Both prices F.O.B. Oxford, Michigan.

BUILDERS CEMENT PRODUCTS CO.
60 E. Burdick St. Oxford, Mich.

FOR SALE

Used Dunbrik Machine, Model CDB-37 . . .Excellent condition, completely equipped, including 4500 steel pallets, and all attachments.

CONCRETE PRODUCTS COMPANY
P.O. Box 8185 Tampa 4, Florida.

DRAIN TILE TEES

Strip out completed tees from your concrete drain tile machine with this special casing. Up to 80 per hour.
For information write:

CONCRETE SPECIALTIES COMPANY
5500 Richfield Rd., Flint, Mich.

SALESMEN WANTED

Prominent block machinery manufacturer offers exceptional career opportunities to two top-flight salesmen — one in the Southwest, one in the Middle West. Experience selling machinery and equipment to block plants in these areas preferred, but related experience will be considered. Submit in confidence, complete resume of education, experience, earnings, personal data.

Address: Box A-18, care CONCRETE
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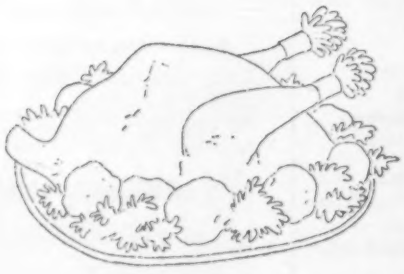

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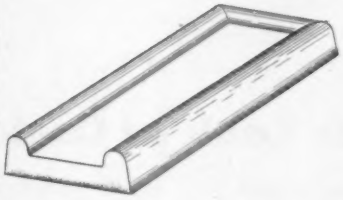

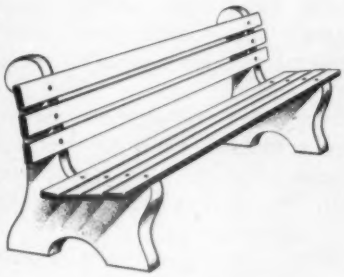

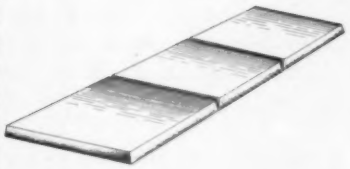

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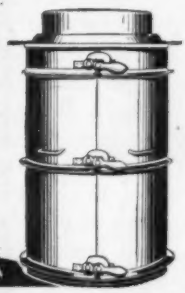

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ADVERTISERS IN THIS ISSUE

A A Wire Products Co. 45
Aurand Mfg. & Equipment Co. 47
Automatic Spring Coiling Co. 47

Baughman Manufacturing Co., Inc. . . 41
Berg Vault Company 55
Bergen Machine & Tool Co., Inc. . . . 16
Besser Company 13, 45 and Back Cover
Blaw-Knox Company 1
Bucyrus-Erie Company 20
Buda Div., Allis-Chalmers Mfg. Co. . 11
Butler Bin 46

Classified Advertising . . . . . 53 and 54
Cleveland Vibrator Company 52
Columbia Machine 7
Construction Machinery Company . . 39

Davis Company, Frank D. 47
Dodge Corporation, F. W. . . . . 12, 44, 48 and 54
Dunn Mfg. Company, W. E. 44
Durant Manufacturing Co. 47
Dur-O-Wal Products Company 49

Edmont Manufacturing Company . . . 49
Erickson Power Lift Trucks, Inc. 49

Forrer's — Products for Masonry Div. of Spray-O-Bond Company . . 43

Gocorp 3

Horn Company, A. C. 49
Hyster Company 19

Jaeger Machine Company . . . . 8 and 9
Johnson Company, C. S. 18

Kent Machine Company 37

Lithibar Company 4

Master Builders Company . . . . . Inside Front Cover
Motorola Communications & Electronics, Inc. 2

Omaha Standard 51

Penn Dixie Cement Corporation . . . . . Inside Back Cover
Permagile Corp. of America 51
Pick Manufacturing Company 43

Quinn Wire & Iron Works 55

Smith Corporation, A. O. 6
Syntron Company 21

Trinity Div., General Portland Cement Company 41
Truck Mixer Manufacturers Bureau . 10

Union Wire Rope Corporation 14 and 15
Universal Door Carrier, Inc. 51

Viking Superior Corporation 38

Waylite Company 36
Westinghouse Transit Mixer Division LeTourneau-Westinghouse Co. . . . . Between 16 & 17
Winslow Scale Company 51
Wyandotte Chemicals Corporation . . 50

THE EDITOR'S PAGE

DOUGLAS LEE

A Time to Look at Costs

With costs of production and distribution in the concrete industries at a very high level, two of the articles in this issue of CONCRETE have a timely significance. Each article shows how a close look at operational methods can effect reductions in production costs.

The J. R. Asbell Block Company story explains how a modernization program, including new kilns equipped with recording thermometers, cuts the percentage of culls significantly, reduces necessary steaming time by 40 per cent, and reduces the amount of labor required to man the operation.

The story on O'Laughlin Ready Mix Concrete Company gives a capsule view of the company's regulated and integrated communication system, which includes two-way radio, duplicating machines in the dispatcher's office and the control room of the batching tower, and intercoms. Numbers used throughout the system help to avoid confusion and increase audibility and understanding of instructions.

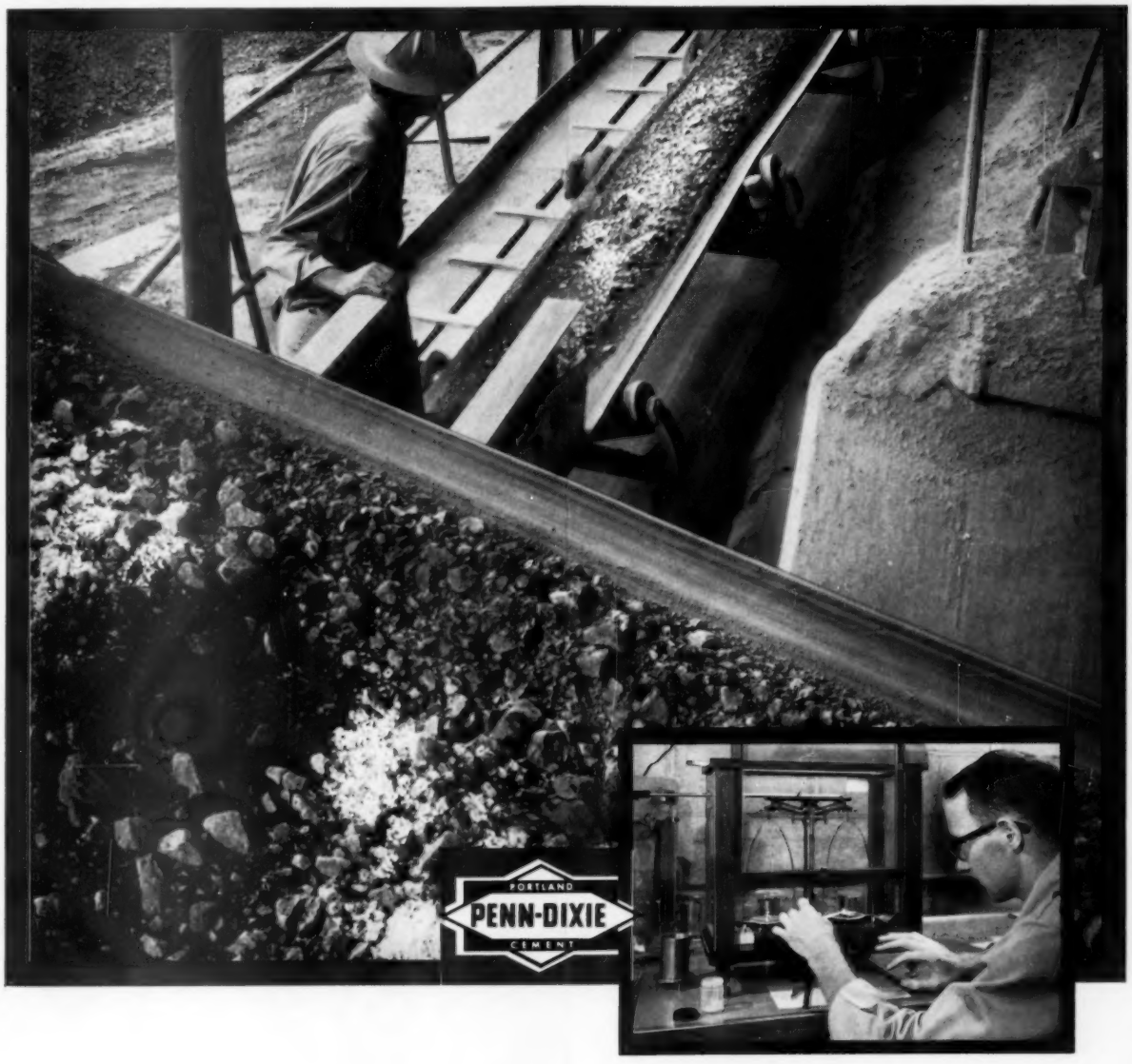
There never was nor will be a time when a continuous check of the efficiency of operating methods could be considered other than a prime function of good management. Under present conditions of continually rising costs of labor and materials on the one hand and greatly increased competition for business on the other, this function of management is an absolute essential.

In the search for better and lower cost ways of doing things, no source of ideas should be overlooked. Obviously, the best and most useful ideas should come from management itself and from supervisory personnel. However, many extremely useful suggestions will originate from other people in a company whose management provides an appropriate climate for interested participation in operational problems.

In the area of outside help, the most useful and important sources of cost-cutting ideas are the manufacturers of equipment and materials. The prime consideration of these manufacturers is identical to that of the concrete products or ready mixed concrete producer — the design of equipment and materials that will squeeze every possible dollar out of production costs. Beyond that, the sales and service forces of these manufacturers are the most traveled people in the industry. No useful operational technique exists anywhere for long without these people seeing or hearing about it.

And, for producers who have been astute enough to affiliate themselves with any of the national or local trade associations, there is an additional wealth of help available for the taking.

No producer need struggle alone with the problem of improving his profit picture by a strong attack on his operating costs. He has willing help available from many sources if he will tap them.



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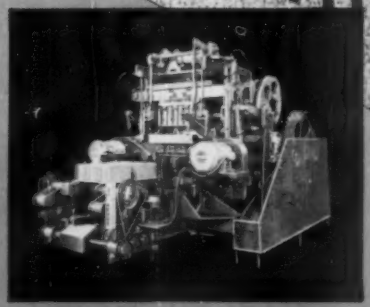
John Ruskin

VIBRAPAC



• Yes, John Ruskin, the great English writer, had the right idea. Blockmakers, for example, invariably find it pays to install Besser Vibrapac machines. The Vibrapac is universally known for its smooth, automatic performance and faster production of high-quality block. No doubt about it, the Vibrapac is the world's leading block machine . . . a profit maker for block plants, everywhere.

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